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April 4, 2013

VIA ELECTRONIC MAIL

Rep. Fred Upton
Chairman
House Committee on Energy and Commerce

Rep. Henry A. Waxman
Ranking Member
House Committee on Energy and Commerce

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Re: **Stakeholder Comments on the RFS White Paper Series**

Dear Chairman Upton and Ranking Member Waxman:

On behalf of the Center for Progressive Reform (CPR), I am pleased to respond to your request for stakeholder comments on the first of your Committee's white papers on the renewable fuel standard (RFS) addressing Blend Wall/Fuel Compatibility Issues.

The attached CPR report, *Sweeping Corporate Immunity for the Fuel Industry: The Next Front in the 'Corporate Accountability' Wars*, provides a comprehensive response to one of the specific questions raised in the Committee's white paper—namely, the issue of whether the RFS should be changed to “include liability relief or additional consumer protections for addressing misfueling concerns.” This question appears to be a call for legislation similar to the Domestic Fuels Act of 2012, a bill that sought to provide absolute tort immunity to corporations engaged in the production, sale, or use of ethanol and other fuel additives, which would leave those legitimately injured by these products without any viable recourse. (The Domestic Fuels Act was introduced in both the House of Representatives and the Senate during the 112th Congress, though neither bill ever received a committee vote.)

The CPR report strongly criticizes “sweeping immunity legislation,” such as the Domestic Fuels Act, as against the public interest. As the report explains, this kind of legislation:

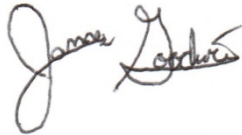
- Obstructs “corrective justice,” or efforts to compensate those for injuries that could not be prevented;

- Reduces economic efficiency;
- Impedes the ability of the civil justice system to deter harmful behavior;
- Shifts the burden of compensation from the responsible party to the general public;
- Undermines the ability of the regulatory system to prevent harm; and
- Conflicts with fundamental principles of federalism.

Consequently, the report concludes by recommending that Congress refrain from adopting sweeping immunity legislation such as the Domestic Fuels Act.

I appreciate your attention to the report. The Member Scholars and staff of CPR look forward to working with your committee as it continues its effort to review the RFS. If you have any questions regarding this report, please do not hesitate to contact me.

Sincerely,

A handwritten signature in dark ink, appearing to read "James Goodwin". The signature is fluid and cursive, with a large initial "J" and a stylized "G".

James Goodwin, J.D., M.P.P.

Policy Analyst, Center for Progressive Reform



Sweeping Corporate Immunity for the Fuel Industry: The Next Front in the 'Corporate Accountability' Wars

**By CPR Member Scholars Thomas O. McGarity and
Sidney A. Shapiro and CPR Policy Analyst Nicholas Vidargas**

CENTER FOR
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About the Center for Progressive Reform

Founded in 2002, the Center for Progressive Reform (CPR) is a 501(c)(3) nonprofit research and educational organization comprising a network of scholars across the nation dedicated to protecting health, safety, and the environment through analysis and commentary. CPR believes sensible safeguards in these areas serve important shared values, including doing the best we can to prevent harm to people and the environment, distributing environmental harms and benefits fairly, and protecting the earth for future generations. CPR rejects the view that the economic efficiency of private markets should be the only value used to guide government action. Rather, CPR supports thoughtful government action and reform to advance the wellbeing of human life and the environment. Additionally, CPR believes people play a crucial role in ensuring both private and public sector decisions that result in improved protection of consumers, public health and safety, and the environment. Accordingly, CPR supports ready public access to the courts, enhanced public participation and improved public access to information. The Center for Progressive Reform is grateful to the American Association for Justice Robert L. Habush Endowment for funding this report, as well as to the Bauman Foundation and the Deer Creek Foundation for their generous support of CPR's work in general.

This white paper is a collaborative effort of the following Member Scholars and staff of the Center for Progressive Reform: **Thomas McGarity** holds the Joe R. and Teresa Lozano Long Endowed Chair in Administrative Law at the University of Texas in Austin, is a member of the Board of Directors of the Center for Progressive Reform, and is the immediate past president of the organization. **Sidney Shapiro** holds the University Distinguished Chair in Law at the Wake Forest University School of Law, and is Vice-President and a member of the Board of Directors of the Center for Progressive Reform. **Nicholas Vidargas** is a Policy Analyst with the Center for Progressive Reform.

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Executive Summary

For more than two centuries, the civil justice system has restrained the dangerous behavior of corporations by compensating the victims of their negligence. While the modern regulatory state, crafted by the legislative and executive branches over decades, plays a vital role in protecting individuals and our environment, Americans have a long tradition of seeking recourse in the courts to fill regulatory gaps by providing a general incentive to avoid corporate misbehavior. Despite this long tradition, the past thirty years have witnessed a concerted assault on the civil justice system by corporate America and its allies in the media and industry-sponsored think tanks.

The effort to close down or limit the civil justice system has proceeded in three waves. First, at the state level, there has been a concerted effort to obtain laws that have, among other things, capped damages for claims against health care providers, eliminated the ability of plaintiffs to hold multiple defendants jointly and severally liable for damages they have jointly caused, capped or eliminated punitive damages for especially egregious misbehavior, and reduced or eliminated claims for economic harm. Second, there has been an extensive effort to persuade the courts that state tort liability is preempted by federal legislation. Third, various industries have sought statutory exemptions from legal liability for past behavior, including oil and gas companies, vaccine and drug manufacturers, and HMOs and other healthcare providers.

Historically, Congress has granted liability immunity to particular industries only as part of a comprehensive federal program to provide remedial and protective mechanisms specific to a given hazard (which typically comes to light as a result of litigation). The National Vaccine Injury Compensation Program, established in 1986, is an example of when Congress established a substitute for state tort law. In 2005, however, Congress established immunity for the gun industry without offering any alternative method of compensation for the victims of tortious behavior by gun manufacturers and distributors.

Recently, additional industries have likewise sought to be completely immunized from liability for their tortious behavior. In 2012, for example, the “Domestic Fuels Act” (DFA) (companion bills in the House and Senate) sought to grant immunity to purveyors of ethanol and other fuel additives. Bills like the DFA are the next wave of the attack on corporate accountability. The massive MTBE litigation of the late 1990s and early 2000s and the efforts by the petroleum marketing industry to secure similar liability waiver legislation from Congress in 2005 was no doubt the impetus behind the current efforts by corn growers and the corn refining and petroleum marketing industries to persuade Congress to enact ethanol liability waiver legislation. This legislation grants absolute immunity from tort without corresponding federal recourse through administrative settlement schemes for those injured by corporate malfeasance. The DFA would dismiss, with prejudice, existing litigation related to fuel additives, including MTBE.

Sweeping immunity legislation, including overly broad grants of immunity for fuel and fuel additives in DFA-type legislation, is against the public interest for the following reasons:

- **Immunity Legislation Eliminates Corrective Justice:** Federal regulatory programs are designed to prevent injury, but they almost never include a mechanism to provide compensation to those who are injured when the preventative standards fail. The “corrective justice function” of tort law fills this gap, and has done so since the advent of English common law. When Congress passes immunity legislation, it eliminates this corrective justice function.
- **Immunity Legislation Reduces Economic Efficiency:** The civil justice system also establishes a more efficient market system. In an efficient market system, persons or entities that harm others are responsible for paying for the results of that harm. When Congress passes immunity legislation, it eliminates this economic improvement.
- **Immunity Legislation Eliminates the Deterrence of Harmful Behavior:** The civil justice system also functions to deter behavior that harms people and the environment. When Congress enacts immunity legislation, it eliminates this deterrence function.
- **Immunity Legislation Shifts Compensation to the Public:** Immunity legislation also shifts the burden of redressing injuries from the responsible party to the victims, to taxpayers, and to society as a whole.
- **Immunity Legislation Weakens Federal Regulation:** The civil justice system not only serves as a backstop for federal regulation, it supports federal regulation and makes it more effective. Immunity legislation eliminates the possibility that the civil justice system will make the regulatory system more effective.
- **Immunity Legislation Does Not Respect Federalism:** States have traditionally enjoyed primary authority to protect the health, safety, and welfare of their citizens. Immunity legislation abandons this fundamental principle of American government in a simplistic effort to relieve corporate defendants of liability for producing dangerous products and engaging in hazardous activities.

Congress should refuse to grant absolute immunity to any industry because of the damage it does to correct injustices and the capacity of government, state and federal, to protect the public and the environment. The important role that the civil justice system provides in providing corrective justice, establishing economic efficiency, and underpinning the regulatory system should not be abandoned in a simplistic effort to relieve corporate defendants of liability for producing dangerous products and engaging in hazardous activities.

Introduction

For centuries, the civil justice system has restrained the dangerous behavior of corporations by compensating the victims of their negligence. While the modern regulatory state, crafted by the legislative and executive branches over decades, plays a vital role in protecting individuals and our environment, Americans have a long tradition of seeking recourse in the courts to fill regulatory gaps by providing a general incentive to avoid corporate misbehavior.

In the last three decades, industry interests have sought to limit the role of the civil justice system in exposing their wrongdoing and in compensating those who were injured as a result. Claiming that the tort system has produced a medical malpractice crisis and encouraged frivolous lawsuits, business interests have advanced “tort reform” measures in Congress and state legislatures aimed at limiting access to the courthouse and capping how much victims can obtain in damages if they can successfully negotiate the barriers to litigation. Tort reform initiatives pretend to correct overzealousness in the judicial system, but they actually preserve corporate profits at the expense of citizens, consumers, and the least politically influential among us.

The latest battle in the corporate accountability wars is an effort to persuade Congress to grant blanket immunity to entire industries that might face litigation for defective products or corporate negligence that endangers human health, imperils the environment, and damages private property. The concept of sweeping corporate immunity from state tort law – a twisted cousin of federal preemption legislation that also dismisses the rights of victims of corporate negligence – was born in response to the hugely successful tobacco litigation of the 1980s and 1990s, and later attempts at comprehensive litigation against gun manufacturers and the fast food industry. President George W. Bush signed into law immunity for gun manufacturers, but an effort by the fast food industry to gain similar immunity has so far never been passed by the Senate.

“Tort reform initiatives pretend to correct overzealousness in the judicial system, but they actually preserve corporate profits at the expense of citizens, consumers, and the least politically influential among us.”

The Attacks on Corporate Accountability

Over the past three decades, perennial defendants in tort litigation, such as the tobacco and pharmaceutical industries, have joined with industry-sponsored conservative think tanks in attacking state common law protections at both the state and the federal level. These efforts to reduce industry liability for negligence have come on three fronts.

State Legislation

First, at the state level, there has been a concerted effort to obtain laws that have, among other things, capped damages for claims against health care providers, eliminated the ability of plaintiffs to hold multiple defendants jointly and severally liable for damages they have jointly caused, capped or eliminated punitive damages for especially egregious misbehavior, and reduced or eliminated claims for economic harm.¹ Previous reports in CPR's Truth About Torts series have shown how most of these assaults on the civil justice system have very little basis in fact or in sound public policy.²

Preemption

Second, there has been an extensive effort to persuade the courts that state tort liability is preempted by federal legislation.³ Under the Supremacy Clause of the Constitution, Congress may choose to preempt state law from operating, and where Congress's intent is not clear, it is up to the judiciary to determine if Congress intended preemption. In the George W. Bush administration, several federal agencies joined this preemption effort. The U.S. Food and Drug Administration (FDA) spearheaded these efforts, filing amicus briefs supporting industry-defendants' claims that federal drug-safety authority preempted state tort actions.⁴ More broadly, FDA inserted language in the preamble to a drug-labeling rule declaring that it preempts all state tort actions for inadequate warnings about the risks posed by a prescription drug. Similarly, the Consumer Product Safety Commission (CPSC),⁵ the Federal Railroad Administration,⁶ the Pipeline and Hazardous Materials Safety Administration, the Transportation Safety Administration, the Department of Homeland Security and, the National Highway Traffic Safety Administration (NHTSA) each made agency history by inserting tort-preemption language in rulemakings during the Bush administration.⁷

Although the courts rejected this argument in some regulatory contexts,⁸ they accepted it in other cases, leaving the plaintiffs with no remedy.⁹ When it is successful, the preemption attack on corporate accountability poses a significant threat to public health and safety by eliminating the incentives that state tort law gives manufacturers to keep up with advancements in safety technology, and it eliminates Americans' fundamental right to go to court to seek redress when harmed by the negligence of others.¹⁰ Adequate protection

of public health depends on the continued existence of state common law as a complement to federal regulation. Common law has a unique ability to provide corrective justice and is a useful way to fill regulatory gaps caused by outdated or imperfect regulation.¹¹

Shortly after his first inauguration, President Obama issued an executive order recognizing that the “Federal Government’s role in promoting the general welfare and guarding individual liberties is critical, but State law and national law often operate concurrently to provide independent safeguards for the public.” The President noted that “[t]hroughout our history, State and local governments have frequently protected health, safety, and the environment more aggressively than has the national Government.”¹² Accordingly, he established a general policy “that preemption of State law by executive departments and agencies should be undertaken only with full consideration of the legitimate prerogatives of the States and with a sufficient legal basis for preemption.”¹³

Immunity

Third, various industries in the past few years have sought statutory exemptions from legal liability for past behavior, including oil and gas companies, vaccine and drug manufacturers, and HMOs and other healthcare providers. When the trend began, it typically involved the creation of some other – and presumably more efficient – means of recompense for victims of industry bad behavior, as we discuss below.

In 2005, however, Congress passed and the President signed a bill granting immunity to the gun industry from certain lawsuits, even though no such lawsuits had ever resulted in jury or judge awards against the industry.¹⁴ Not surprisingly, that law was the result of intense lobbying by the gun industry and its champions.¹⁵ The food industry then went to Congress, arguing that it should be exempted from all lawsuits relating to health conditions associated with weight gain or obesity. Most recently, there is the effort to gain immunity for the use, development, and transportation of fuel additives described at the beginning of this White Paper. These most recent efforts, like gun industry immunity, provide no alternative method of compensation for tort victims.

Liability Immunity Legislation

Historically, Congress has granted liability immunity to particular industries only as part of a comprehensive federal program to provide remedial and protective mechanisms specific to a given hazard (which typically comes to light as a result of litigation). Congress has created a workers compensation program for railroad and harbor workers, and compensation programs for the victims of Black Lung disease, vaccine related illnesses, and the terrorist attacks of September 11, 2001. In all of this legislation, Congress has provided an alternative compensation system for its limitations on a plaintiff's right to sue.¹⁶ Unlike these efforts, the gun industry immunity and other similar efforts, such as broad fuel immunity initiatives, "take without giving back."¹⁷

Alternative Compensation Funds

The National Vaccine Injury Compensation Program (NVICP),¹⁸ established in 1986, is an example of how Congress has established a substitute for state tort law. The legislation provides a no-fault compensation regime for vaccine-related injuries and deaths. In so doing, the legislature removed claims for injuries caused by vaccinations from state courts and provided a special claim procedure using special masters and the United States Court of Federal Claims.

When Congress replaces the civil justice system with an administrative system, the system does not necessarily work in an efficient and fair manner. Analyses by the General Accountability Office (GAO),¹⁹ the Federal Judiciary Center,²⁰ a congressional committee²¹ and others²² have raised concerns about the NVICP concerning delays in resolving cases that stretched far beyond the statutory 240-day limit for resolving cases, an overly adversarial process in a program intended by Congress to be less adversarial, and that attorneys fees were too low, took too long to process, and were subject to unnecessarily adversarial review by Department of Justice (DOJ) attorneys. Recent developments seem to have exacerbated the problems. Virtually no cases filed under the NVICP are completed with the 240-day deadline established in the act, largely because of recent administrative and judicial interpretations that have created hurdles to proving causation.²³ Moreover, some types of plaintiffs have been both excluded from receiving compensation and from suing under state tort law.²⁴

Congress had a stronger justification for the creation of the Victims Compensation Fund (VCF), related to the terrorist attacks on September 11, 2001. If all of the victims had sued the airlines and related businesses, the available company assets and insurance indemnification would have been rapidly exhausted, and many plaintiffs would have been left with no financial compensation. Because all airplanes were grounded for two and half days, the industry lost approximately \$330 billion per day.²⁵ Combined with reduced demand for airplane travel after the attacks, the industry faced a huge economic hurdle, and

it lost approximately \$24 billion over the next year.²⁶ Thus, the federal government had an interest in both protecting a large and important domestic industry and providing relief for the many victims of the attacks.

The VCF statute created an administrative compensation system that gave plaintiffs a choice between suing airlines as part of a consolidated case in federal court, subject to the limits of the airlines insurance lines and waiving their right to sue in exchange for a no-fault, tax-free payment. Importantly, the legislation did not protect the airline industry at the expense of the victims of the attacks by eliminating their access to justice. Instead, Congress attempted to solve both problems by achieving a measure of solvency in the industry and providing significant financial help to the victims. It also established the government as a protector of its citizens, thereby neutralizing one of the primary goals of terrorism -- putting a wedge between citizens and their government.²⁷

The VCF is hardly a perfect substitute for the civil justice system. There appear to be problems concerning a lack of transparency, the arbitrariness of some of the fund administrator's compensation calculations, and the limitations on eligibility.²⁸ Nevertheless, Congress did not simply rescue an industry by ignoring the victims of the tragedy. Liability immunity statutes like the Firearms Liability Waiver and sweeping fuel immunity efforts neither establish administrative compensation programs nor give victims the option of going to court. They protect an industry by divesting victims of their right to a trial by jury.

The Firearms Liability Waiver Legislation

In the early 2000s, some private attorneys, who had assisted in the tobacco litigation, decided to bring similar class action lawsuits against the manufacturers of assault handguns for damages to individuals and several municipalities for damages caused by those guns when they wound up in the hands of criminals.²⁹ Statistics compiled by the federal Bureau of Alcohol, Tobacco and Firearms (ATF), the severely underfunded agency with responsibility for regulating interstate sales of weapons, revealed that guns were channeled to criminals through a very small number of "rogue" gun dealerships. Testimony in the litigation revealed that gun manufacturers could easily ascertain the identities of these dealerships. Only 1.2 percent of licensed retail gun dealers were responsible for the sale of more than 57 percent of the guns traced to crimes between 1996 and 1999.³⁰

The plaintiffs' attorneys had to prove that the manufacturer violated the relevant standard of care, that the violation caused the plaintiff's harm, and that the intervening act of dealers, previous owners, and the criminal were not "superseding intervening causes." Consequently, gun manufacturers were successful in almost every case. Nevertheless, the gun dealers, with the aid of the politically powerful National Rifle Association, persuaded Congress to enact the Protection of Lawful Commerce in Arms Act (PLCA Act) of 2005 into law.³¹ That

"Liability immunity statutes like the Firearms Liability Waiver and sweeping fuel immunity efforts neither establish administrative compensation programs nor give victims the option of going to court."

statute retroactively banned most lawsuits brought by individual gun victims and all lawsuits brought by municipalities against gun manufacturers, importers, distributors, dealers and trade associations for marketing and distributing their products. It did not put into place any compensation regime for innocent victims, nor did it provide additional resources to the beleaguered ATF.

The country has paid, and continues to pay a high price for gun violence. After the massacre at the Sandy Hook elementary school, Congress is once again considering legislation imposing some restrictions on gun ownership. Responding to special interest pleading from the gun industry, Congress cut off what may have been a promising response to gun violence when it passed the firearms liability waiver.

Other Liability Waiver Legislation

Even before the previous, legislation, Congress passed the Volunteer Protection Act,³² which gives federal immunity to volunteers, but not non-profit organizations, such as the American Red Cross. As with the firearms legislation, Congress established no alternative compensation system to replace the civil justice system. In its wake, Congress has considered dozens of proposed bills to give similar immunity in other circumstances and supersede state laws, including the bills to protect volunteer pilots, the Volunteer Firefighter Assistance Act, the Nonprofit Athletic Organization Protection Act, and the Doctor Disaster Immunity to name a few. Congress continues to consider such legislation each session, but to date only the Cardiac Arrest Survival Act of 2000 has been passed.

MTBE: The Impetus Behind the Ethanol Bill

The massive MTBE litigation of the late 1990s and early 2000s and the efforts by the petroleum marketing industry to secure liability waiver legislation from Congress in 2005 was no doubt the impetus behind the current efforts by corn growers and the corn refining and petroleum marketing industries to persuade Congress to enact ethanol liability waiver legislation. MTBE was a fuel additive that petroleum refiners had been using to prevent engine knocking after EPA banned lead in gasoline in the late 1980s. Its popularity expanded as refiners used it as an oxygenate to meet the winter oxygenate requirements imposed by EPA to comply with the ambient air quality standard for carbon monoxide. The use of MTBE grew dramatically as EPA and the states mandated reformulated gasoline in urban areas that did not meet the ambient air quality standards for ozone.³³

Although MTBE is not especially toxic as compared to other components of gasoline, it smells and tastes so bad, even in the tiniest concentrations, that it can ruin drinking water supplies.³⁴ Another troubling characteristic is its ability to move very rapidly in groundwater from spills and leaking underground storage tanks (LUSTs) to aquifers that are often used by municipalities and individuals as a source of drinking water. EPA estimated in 1999 that there were 825,000 LUSTs nationwide, approximately 550,000 of which were located at retail gasoline stations. Although EPA had required all tanks to be upgraded by 1998, releases continued from some upgraded systems due to inadequate design, installation, maintenance, and/or operation.

By the end of the 1990s, lawsuits had been filed by dozens of individual plaintiffs and several municipalities against the petroleum refineries claiming that they knew full well that MTBE was malodorous, that it migrated more rapidly in groundwater than other constituents, and that hundreds of thousands of underground gasoline storage tanks were leaking MTBE into the surrounding groundwater. The lawsuits noted that refiners nevertheless continued to add MTBE to gasoline rather than using other oxygenates or refining it differently.

As it became clear that they were facing hundreds of millions of dollars in liability, the petroleum companies beat a path to Congress to demand legislation shielding them from liability for marketing a defective product. Their lobbyists persuaded supporters in the U.S. House of Representatives to attach the liability waiver to the lengthy energy legislation that Congress was considering in response to the recommendations of Vice President Dick Cheney's energy task force, but the provision was very unpopular among senators from states that had been adversely affected by MTBE in groundwater. Interestingly, the legislation also contained liability waivers for ethanol producers. Both provisions were debated in conference committee in two successive Congresses, but they were removed on both occasions.

"As it became clear that they were facing hundreds of millions of dollars in liability, the petroleum companies beat a path to Congress to demand legislation shielding them from liability for marketing a defective product."

Although petroleum refiners soon removed MTBE from gasoline, most gasoline sold in the United States still contains substantial amounts of another additive: ethanol. There is little indication at the moment that ethanol is causing any health or environmental problems of such a magnitude that they could give rise to litigation. But the ethanol and fuel industries are still insisting on the same liability waiver.

The Domestic Fuels Act of 2012

In 2012, Senator John Hoeven (R-N.D.) and Representative John Shimkus (R-Ill.), two of the corn industry's biggest congressional supporters,³⁵ introduced "The Domestic Fuels Act of 2012"³⁶ and its companion "The Domestic Fuels Protection Act of 2012".³⁷

The legislation, which we will refer to as the DFA, supports an industry-led push for mandating that more ethanol be used in gasoline while "protecting" the fuel supply chain from the threat of litigation related to that mandate. The liability waiver, however, is not limited to the use of ethanol as a fuel additive. The bills prohibit citizens and states from suing anyone in the fuel chain, including oil and ethanol producers, for environmental harm, human health effects, or consumer product damage resulting from the use, development, or transportation of fuel additives, whether they are ethanol or some other additive.

The bill's supporters promoted it as a way to encourage the market to accept new fuel blends and protect small businesses that chose to supply them, but the legislation would protect the entire fuel supply chain – from the large oil and chemical companies that create fuel additives all the way to the corner filling station – from litigation over any fuel additive. Worse still, the bills would dismiss, with prejudice, existing litigation related to fuel additives, including MTBE.

The DFA owes its existence to relatively recent political interest in ethanol. In 2007, in response to growing pressure to increase renewable fuel production and reduce demand for foreign oil, Congress reauthorized the Renewable Fuel Standard (RFS).³⁸ The RFS requires the use of biofuels that reduce greenhouse gas emissions by at least 20 percent compared to ordinary gasoline by 2022. The RFS has stimulated the demand for ethanol, and in response fuel refiners and distributors and ethanol producers, have sought liability immunity.

The DFA provides that "[n]o person shall be liable under any Federal, State, or local law (including common law) because an underground storage tank, underground storage tank system, or associated dispensing equipment is not compatible with a fuel or fuel additive" as long as that "tank, system, or equipment has been determined to be compatible with the fuel or fuel additive" under guidelines to be developed by the EPA.³⁹ In addition, the bills prohibit litigation, and dismiss with prejudice any ongoing litigation, against "any entity engaged in the design, manufacture, sale, or distribution of any" fuel or fuel additives that are regulated under the Clean Air Act or part of a fuel mix regulated under the CAA.⁴⁰

The DFA is written to protect the entire fuel chain when owners of older cars or small boats "misfuel" – that is, put E15 (gasoline with 15 percent ethanol) in their gas tanks. Since ethanol can damage older and smaller engines, EPA has warned that E15 should not be used in cars older than the 2001 model year or in motorcycles, watercraft, off-road vehicles, or gasoline powered-equipment because it can damage engines and corrode tailpipes, leading to increases in toxic emissions. EPA labeling requirements for fuel pumps, however, do not

appear to be sufficient to prevent misfueling. The legislation overlooks this problem and shifts the costs of misfueling to the consumer. This is no trivial matter, given the millions of dollars worth of older motorcycles, watercraft, and off-road vehicles that are at risk.

Moreover, the legislation would prohibit future litigation, and dismiss with prejudice any ongoing litigation, against “any entity engaged in the design, manufacture, sale, or distribution of any” fuel or fuel additives that are regulated under the Clean Air Act (CAA) or part of a fuel mix regulated under the CAA.⁴¹ If this provision becomes law, no citizen, local, or state entity can sue the negligent party or parties if a new fuel additive has been released into drinking water supplies as long as the manufacturer of the additive complied with the notification provisions in the CAA. These provisions require the manufacturer to inform the EPA Administrator that it will introduce a new fuel additive that industry testing has shown to be safe. Since the legislation is retroactive, these immunity bills could result in the dismissal of ongoing litigation related to MTBE – a carcinogenic fuel additive that has been found in many drinking water supplies and has been the subject of several multimillion-dollar lawsuits by individuals and municipalities.

The DFA places all the liability and risk of fuel additives on the American consumer, leaving them with damaged engines, poisoned groundwater, worse tailpipe emissions, and no one to help. At a hearing before the Environment and Economy Subcommittee of the House Energy and Commerce Committee, Chairman John Shimkus (R-IL) suggested that he and other legislators did not intend for these bills to affect litigation beyond consumer product liability claims over approved fuel additives and blends.⁴² While the chairman may be right – that the DFA does not affect liability under the Resource Conservation and Recovery Act or the Comprehensive Environmental Response, Compensation, and Liability Act – the breadth of the bill suggests that oil companies could begin using any one of thousands of fuel additives, many of them toxic or carcinogenic, without any accountability in state or federal court.

The Consequences of Sweeping Corporate Immunity

Bills like the Domestic Fuels Act are the next wave of the attack on corporate accountability. Like preemption, this legislation grants absolute immunity from common law liability without corresponding federal recourse through administrative settlement schemes for those injured by corporate malfeasance. The legislation undermines the role of the civil justice system in providing corrective justice, addressing market flaws, deterring unreasonable behavior that injures people and the environment, and providing useful feedback to Congress and regulatory agencies. Such legislation is inconsistent with America's long tradition of avoiding federal interference with state civil justice systems.

Immunity Legislation Eliminates Corrective Justice

Federal regulatory programs are designed to prevent injury, but they almost never include a mechanism to provide compensation to those who are injured when the preventative standards fail. The "corrective justice function" of tort law fills this gap, and has done so since the advent of English common law. When Congress passes immunity legislation, such as overly broad fuel immunity legislation, it eliminates this corrective justice function.

Corrective justice incorporates the fundamental principle that individuals should be able to rely on the legal system to provide them with compensation when they are injured through the fault of others. When someone is injured despite a manufacturer's compliance with existing federal regulatory standards, the corrective justice function of state tort law recognizes that the manufacturer should still be liable for those injuries if it has not acted reasonably in light of existing information or available technologies not yet reflected in federal regulation. In this manner, the civil justice system ensures that those injured are properly compensated in light of the evolving state of technology and new information available to the defendant. The corrective justice function requires that a company should compensate those who are injured as a result of its failure to act responsibly, even if the company is not subject to fines or other sanctions for violating any particular regulatory requirement.

Congress at times has substituted an administrative compensation system for the civil justice system. While this decision presents both advantages and disadvantages, it does not eliminate the corrective justice function of the civil justice system because an alternative means of compensation is available. By comparison, immunity legislation wipes out the corrective justice function.

“Up to this point, Congress has almost always rejected immunity legislation. The Protection of Lawful Fire Arms Act is an unfortunate exception.”

The effort in legislation like the Domestic Fuels Act to retroactively ban tort litigation is especially offensive. It denies individuals, who were operating under the assumption that they were protected by the civil justice system, the opportunity to use that system to obtain corrective justice. Up to this point, Congress has almost always rejected immunity legislation. The Protection of Lawful Fire Arms Act is an unfortunate exception. The PLCAA prevents surviving families of mass shootings from bringing product liability actions against assault weapon manufacturers, despite the offensive marketing they often employ and known risks their products pose to innocent victims in our towns and cities. Likewise, the DFA would prevent innocent municipalities and homeowners from seeking compensation from the manufacturers of fuel additives like MTBE when their wells and groundwater foreseeably become contaminated with those additives as a result of leaking underground storage tanks and spills.

Immunity Legislation Reduces Economic Efficiency

The civil justice system also establishes a more efficient market system. When Congress passes immunity legislation, it eliminates this economic improvement.

Economics identifies two types of costs associated with the sale and use of a consumer product. “Internal” costs are costs paid for by the company responsible for the manufacture, distribution, or sale of the product.⁴³ A manufacturer, for example, will pay for the labor and raw materials that are necessary to make its product. These costs are “internal” to the transaction of making and selling the product because the seller must pay for these expenses in order to be in business. By comparison, “external” costs are costs associated with the making and use of a product that are paid for by persons other than those responsible for the making and selling of a product or service,⁴⁴ such as the medical expenses paid by a consumer as the result of an injury by a dangerous product. In an efficient market, the seller of a dangerous product would pay for the external costs resulting from the manufacturer, distribution, and use of the product, and include these expenses in the product price.⁴⁵ If the product is sold for a price less than its internal and external costs, there will be greater demand for the product than if it were sold at a higher price reflecting both of these costs, which is an economically inefficient outcome.⁴⁶ In addition, overproduction also reduces aggregate social wealth by creating costs that would not exist if the product were properly priced.⁴⁷

The tort system provides a valuable service for society when it causes the internalization of external costs. When, for example, Shapiro, Ruttenberg, and Leigh studied the cost of injuries and fatalities attributable to three dangerous products – Ford SUV’s with Firestone tires, the pharmaceutical drug Baycol, and All Terrain Vehicles (ATVs) with three wheels – they found that, according to a cost of injury estimate, the three products alone created nearly \$4.7 billion in external costs.⁴⁸ Their estimates did not include the cost of pain and suffering or other extended costs. The extended costs can be quite large.

In their study, the three authors found that external costs measured by a cost of injury method ranged from \$4,045 to \$1,697,279 per case, extended costs ranged from \$159,349 to \$2,554,783 per case.⁴⁹

Economics treats those who seek sweeping immunity legislation as “rent seekers.”⁵⁰ It is legislation that favors special interests and makes markets less efficient than they would be without the legislation. In rent seeking, special interests seek to use legislation to protect their own profitability, which is in their self-interest, but is not in the general public interest.

The PLCAA interferes with the efficient functioning of markets by preventing the civil justice system from forcing gun manufacturers to pay for harms that they have caused by their tortious behavior. The DFA would have the same impact concerning those in the chain of supply of fuel additives. In both cases, immunity legislation constitutes a rejection of capitalism and well functioning markets.

Moreover, in a well functioning market, consumers would have complete information about a product, including how dangerous it is to them or others. Manufacturers and sellers, however, have a strong incentive to keep from the public information in their possession about such risks and to attack as inaccurate public information about the risks.⁵¹ The civil justice system helps to shed light on information by disclosing information concerning the inferiority of products and services. Immunity inhibits access to this information and allows inferior products to stay on the market.

Immunity Legislation Eliminates the Deterrence of Harmful Behavior

The civil justice system also functions to deter irresponsible behavior that harms people and the environment. The knowledge that they may be forced to compensate the potential victims can deter companies from acting unreasonably in the first place. The deterrence function of the civil justice system exists both because of the potential that a company will have to pay compensation to persons that it has harmed and because of the negative publicity that can adversely impact the company’s standing with its customers, investors and the public at large. When Congress enacts immunity legislation, it eliminates this deterrence function.

Legislation that Congress has passed to regulate potential risks to people and the environment has the important advantage that it can prevent harms before they can occur. The civil justice system, by comparison, operates retroactively, after there are injuries or harm has been caused. But federal regulatory standards often do not adequately prevent the harms that they were supposed to prevent. There are a number of reasons for this result.

First, regulatory agencies are subject to being captured. “Agency capture” describes the many ways that powerful interest groups can wield undue influence over decision-makers who should be setting safety standards according to statutory mandates and a professional duty to protect consumers, rather than ideological preferences. This can occur when administrations appoint administrators who are opposed to their own agencies’ protective missions. Under the George W. Bush administration, for example, high-level agency decision-makers were often former (and future) business lobbyists, industry lawyers, and employees of trade associations.⁵²

The rulemaking process also generally favors regulated industry. Product manufacturers have better access to information about safety data and design and engineering capabilities than do consumer advocates or regulatory officials. Such information is the fundamental basis for regulatory standards, and its concentration in the hands of those who would be regulated creates an unequal balance of power in the formal procedures and informal negotiations that inform the rulemaking process. The tort system, on the other hand, is built on procedures that are designed to put all parties on equal footing, with equal access to relevant safety information. Moreover, the tort system involves harmed individuals and lawyers who can dig deeply into facts about a risk. Indeed, they often elicit information never known to regulatory officials.

Second, federal agencies have also been subject to budget cuts that have impacted their capacity to promulgate regulations and to enforce them. Additional budget cuts are likely as Congress struggles to reduce the federal deficit. When agencies lack money and staff, or when those resources are shifted to non-regulatory programs, the development of well-designed safety and environmental standards languishes, which can leave in place inadequate, older regulatory standards. And with inadequate resources, regulatory oversight and enforcement can also languish. If Congress eliminates state tort law, manufacturers operate without sufficient incentive to update their products in ways that reduce risks to consumers.

Third, even when agencies are able to regulate, the rulemaking process is notoriously slow. Studies indicate that the average time it takes to complete a rule after it is proposed is about 1.5 to 2 years, but no one thinks that any type of significant rule can be completed in such a short time frame. As Professor Richard Pierce has observed, “[I]t is almost unheard of for a major rulemaking to be completed in the same presidential administration in which it began. A major rulemaking typically is completed one, two, or even three administrations later.”⁵³ The EPA told the Carnegie Commission that it takes about five years to complete an informal rulemaking.⁵⁴ A Congressional report found that it took the Federal Trade Commission (FTC) five years and three months to complete a rule using hybrid rulemaking.⁵⁵ These reports do not take into account additional analytical requirements that have been imposed since their publication date.

In Congressional testimony, Professor Shapiro explained why a realistic time schedule for complicated regulations was four to eight years.⁵⁶ Moreover, these estimates assume the comment period only takes three months, which is usually not the case, and that an agency can respond to rulemaking comments, which can number in the hundreds or even thousands, in 12 months. It also assumes the agency does not have to (1) hold an informal hearing, (2) utilize small business advocacy review panels under the Small Business Regulatory Enforcement Fairness Act (SBREFA), (3) consult with advisory committees, and (4) go through the Paperwork Reduction Act process at the Office of Information and Regulatory Affairs (OIRA). Although some of these activities might be undertaken simultaneously with the development of a rule or responding to rulemaking comments, these activities also have the potential to delay a rule by another 6-12 months.

Tort litigation provides an important mechanism for corporate accountability when there are regulatory gaps or the regulatory system operates too slowly. When that happens, the civil justice system serves as a complementary apparatus to ensure that ordinary citizens and consumers are protected. For example, in reaction to the Bush administration's weakening of Clean Air Act regulations, the North Carolina Attorney General sought "last resort" injunctive relief against power plants in neighboring states to force them to clean up their emissions.⁵⁷ Regulatory decisions can often be clouded by political influence in the executive branch.

Immunity legislation, such as the Domestic Fuels Act, eliminates this backstop feature of the civil justice system. The proposed legislation eliminates lawsuits related to leaking tanks, contaminated groundwater, or misfueling as long as a fuel additive or underground storage tank has met EPA's regulatory approval. It therefore assumes the EPA regulatory protections are sufficient to protect the public, but this might not be the case, as the MTBE situation teaches us. If EPA were to fail to do its job properly, due to lack of resources at the agency, executive branch interference, or simple misfortune, then victims of leaking underground storage tanks, for example, would have absolutely no recourse.

Immunity Legislation Shifts Compensation to the Public

Immunity legislation also shifts the burden of redressing injuries from the responsible party to the victims, to taxpayers, and to society as a whole. Consider a report, for example, issued by the National Conference of State Legislatures on a rule proposed by NHTSA, which would require that automobile manufacturers install roofs that are less likely to collapse if a car rolls over. The report estimated that the agency's asserted preemption of tort suits would cost the states \$60.2 million a year because some persons who would become disabled as a result of rollover accidents would be forced to resort to Medicaid (partially funded by states) because of the lack of tort compensation.⁵⁸

"Immunity legislation also shifts the burden of redressing injuries from the responsible party to the victims, to taxpayers, and to society as a whole."

The public can also end up absorbing millions of dollars in costs attributable to dangerous products and practices even when the tort system provides compensation. When Shapiro, Ruttenberg and Leigh studied the total costs associated with three dangerous products, they found that taxpayers might have been responsible for a significant percentage of costs not picked up by the tort system. Concerning all three products, they constructed likely scenarios that would result from three accidents. Based on this estimate, they found that the public sector could end up paying for a significant portion of costs that would not be included in tort compensation:

Product	Total Extended Costs Per Accident	Family Costs Per Accident	Public Costs Per Accident
Ford SUV ⁵⁹	\$740,000 - \$2,555,000	\$740,000-\$981,000	\$495,000 - \$2,555,000
Baycol ⁶⁰	\$159,000 - \$2,207,000	\$96,870 - \$2,207,000	\$62,479 - \$116,073
ATVs ⁶¹	\$289,000 - 2,366,000	\$289,000 - 1,437,000	\$32,000 - \$928,000

Table 1: Estimated Taxpayer Costs Associated With Three Dangerous Products

When the tort system deters behavior that creates accidents such as those studied, both individuals and the public are better off. The individual is spared the pain, suffering, economic loss and medical expenditures that usually accompany a preventable accident, and society avoids the Medicare, Medicaid and other public assistance expenditures that are usually incurred when the individual cannot afford necessary medical attention. Immunity legislation divests the civil justice system of this powerful deterrent effect. In the case of MTBE, for example, public utilities that provided safe drinking water to millions of people suffered hundreds of millions in economic losses when MTBE contaminated the aquifers from which they drew their water supplies. Had the petroleum companies that were responsible for the contamination been shielded by immunity legislation, municipal taxpayers and ratepayers would have been stuck with those significant losses.

Immunity Legislation Weakens Federal Regulation

The civil justice system not only serves as a backstop for federal regulation, it supports federal regulation and makes it more effective. Professor Thomas McGarity describes the informational interactions between regulatory agencies and the courts as “feedback loops ... in which each institution draws on information, experience and different incentives of the other.”⁶² Immunity legislation eliminates this possibility that the civil justice system will make the regulatory system more effective.

As a result of tort actions, Congress is informed of problems in the regulatory system. Consider, for example, how the civil justice system prompted legislation and regulation in response to the Ford Explorer/Firestone tire problem. In 2000, Congress passed the

Transportation Recall Enhancement, Accountability and Documentation (TREAD) Act, which required NHTSA to develop a new system for gathering and analyzing reports of tire, equipment, and motor vehicle defects.⁶³ Regulatory agencies obtain technical data, analyses of the state of the science from the relevant literature, and other information that can inform subsequent regulatory decisions. At the same time, the courts look to the agencies for analysis of the risks and benefits of regulated products, as well as regulatory standards that can factor into decisions about whether regulated parties have met their duty of care. Feedback loops “have unquestionably improved the quality of decision-making in both institutions.”⁶⁴

Immunity legislation destroys the feedback loop, unwisely limiting the useful information that is obtained from the tort system. Tort claims filed in state courts are a primary source of information for agencies about potential holes or gaps in the regulatory protection system. Simply by virtue of a claim having been filed, the tort system provides signals that defects may exist or existing safety standards may be inadequate. “The availability of damages in state tort lawsuits can give injured citizens the incentive to come forward and share potentially valuable information.”⁶⁵

At each successive step in the litigation process, tort suits provide additional opportunities for the development of information that could be useful to federal agencies.⁶⁶ Pre-trial discovery can turn up technical data about the risks posed by a product or practice. The discovery process can also uncover useful information about decisions made by manufacturers concerning safety and environmental decisions, thereby adding a level of public accountability. Regulatory agencies may also be informed by expert testimony given in discovery or at trial when the testimony is bolstered by the experts’ analysis of the state of the science. In addition, expert analysis of the specific facts that give rise to tort claims sheds light on how injuries actually occur in the real world.⁶⁷ Finally, jury decisions, whether in favor of injured plaintiffs or manufacturer defendants, provide insight about evolving social norms, information that can be useful to agencies when they analyze the potential impacts of proposed regulations.

Immunity legislation would destroy this vital source of information about corporate misconduct in areas subject to the immunity shield. Attorneys for the plaintiffs in the MTBE litigation, for example, uncovered dozens of “smoking gun” documents showing that the petroleum companies knew full well that MTBE was contaminating groundwater, that it caused that water to be unfit for drinking, and that they had not disclosed information to EPA. If Congress passes the DFA, there will be no civil justice actions to ferret out evidence of corporate misconduct relating to ethanol and future fuel additives.

“Tort claims filed in state courts are a primary source of information for agencies about potential holes or gaps in the regulatory protection system.”

Immunity Legislation Does Not Respect Federalism

Adequate protection of public health depends on the continued existence of state common law as a complement to federal regulation. Common law has a unique ability to provide corrective justice and is a useful way to fill regulatory gaps caused by outdated or imperfect regulation. States have traditionally enjoyed primary authority to protect the health, safety, and welfare of their citizens. Federal immunity legislation such as sweeping fuel immunity efforts weaken this fundamental principle of American government in a simplistic effort to relieve corporate defendants of liability for producing dangerous products.

As is widely recognized, federalism in the United States has strong advantages. As the American Enterprise Institute's Michael S. Greve notes, "Popular appeal aside, one can make a powerful theoretical case for the experimental, decentralized politics that the laboratory metaphor suggests. Political institutions should be capable of adapting to changing economic circumstances and social values. Much can be said for the piecemeal diffusion of new policies: when we do not know what we are doing, it is best not to do it everywhere, all at once."⁶⁸ Justice Brandeis' metaphor, "laboratories for experiment" captures this idea.⁶⁹ Under this concept, states can develop responses to emerging public problems, forming a system of laboratories in which the experience in each state informs the other states and the national government. Federalism therefore promotes gradualism, feedback and institutional learning. Moreover, federalism permits states to adapt to local needs, circumstances, and preferences.

The DFA would stop this experimentation and development in its tracks, while taking away from the states their ability to hold wrongdoers accountable, should they so choose. For example, many states have enacted regulatory programs regulating underground storage tanks that would be preempted by the DFA. It is not at all clear that the bill, if enacted, would not also limit the efforts by state attorneys general to pursue violators of these critical regulatory programs.⁷⁰

Conclusion

In recent years, the elected branches of our government have failed to address many real social problems for which solutions are desperately needed. Indeed, the fact that common law courts have been playing an increasing role in “determining the regulatory responsibilities of U.S. industry” is due to the fact that elected officials have been slow to address pressing problems. This is likely a consequence of the dependence of elected officials on campaign donations from regulated private sector entities.⁷¹ When Congress and regulatory agencies are slow to act, the civil justice system is present as an important backstop, a role that immunity legislation eliminates. Seeking special immunity from state tort law – the background set of principles that define the duty of corporations to avoid wrongful injury to others – is a relatively new phenomenon that merits close scrutiny in light of the virtues of a robust civil justice system.

With corporate immunity legislation, such as the DFA, Congress is not replacing a state tort claim with an improved or alternative federal compensation scheme or federal regulatory program; it is simply erasing that claim altogether. This move not only shields companies from legal responsibility for their defective products and negligent conduct, it also abandons the federalist view, long championed by conservatives, that state common law has an important role to play in our federal system of government. At the same time, it transfers costs from the person or entity that has harmed people to the victims and the taxpayers.

Legislation to grant sweeping fuel immunity, if enacted, will establish a perverse incentive for companies to bring unproven and under-studied fuel additives to market with little concern for their potential to damage automobile engines or contaminate groundwater. Worse, it will set the stage for additional corporate interests to seek industry-by-industry and product-by-product nullification of the common law of torts as applied to them and their products.

Fuel immunity legislation undercuts States’ authority to protect the health, safety, and welfare of their citizens and leaves harmed citizens with no recourse to justice. The common law and these fundamental principles of American government should not be abandoned in favor of relieving corporate defendants of liability for producing dangerous products.

Fuel immunity legislation undercuts States’ authority to protect the health, safety, and welfare of their citizens and leaves harmed citizens with no recourse to justice.

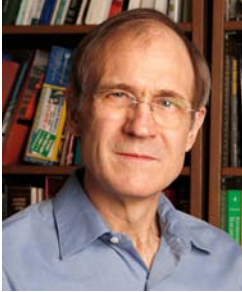
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The Clean Air Task Force is a non-profit environmental organization that works to protect the earth's atmosphere by improving air quality and reducing global climate change through scientific research, public advocacy, technological innovation, and private sector collaboration. CATF appreciates the opportunity to provide this response to the Energy and Commerce Committee's inquiry about the blend wall and the complications caused by the Renewable Fuel Standard.

This response focuses specifically on the following question posed by the Committee:

Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?

EPA's Capacity to Address the Blend Wall

The first part of the Committee's question ("Can blend wall implementation challenges be avoided without changes to the RFS?") is timely because EPA is currently engaged in a rulemaking process could be used to substantially alleviate the blend wall problem. As long as cellulosic biofuel production falls short of the goals that Congress set in 2007, EPA must make annual adjustments to the RFS cellulosic volume mandate. (The Agency is currently proposing to shrink the 2013 requirement from 1 billion gallons to 14 million gallons.) Congress gave EPA the authority to make corresponding reductions to the overarching annual volume requirements for "advanced biofuels" (mainly sugarcane ethanol and soy biodiesel) and conventional "renewable fuel" (mainly corn ethanol).¹ So far, though, the Agency has declined to make corresponding reductions, opting instead to allow extra production of "advanced biofuels" like sugarcane ethanol and biodiesel to make up for the missing cellulosic fuels.

In 2013, the RFS cellulosic biofuel target will exceed actual production levels by about a billion gallons; by 2022 the gap will grow to more than 10 billion gallons as rapidly expanding RFS targets outpace the slow ramp-up in cellulosic capacity. If EPA continues to allow non-cellulosic "advanced biofuels" to fill the cellulosic gap, the resulting demand will overwhelm the sustainably producible supplies of both sugarcane ethanol and biodiesel

¹ CAA §211(o)(7)(D)(i).

and kick off a new parade of horrors. A study by the Organization for Economic Cooperation and Development and the International Food and Agriculture Organization found that this new RFS-driven demand for sugarcane would lead Brazilian producers to export much of their product to the United States. With their homegrown ethanol being shipped north, Brazilians will meet their own national biofuel requirements by importing corn ethanol from the US. The inflated US demand for “advanced biofuels” would thus drive additional production of Brazilian sugarcane ethanol and, ironically, US corn ethanol – perhaps the least “advanced” biofuel of all.

Meanwhile, the new demand for biodiesel (the other subset of non-cellulosic biofuel that the RFS defines as “advanced”) would divert soybeans and other oilseeds from food markets to the fuel market. Much of the resulting unmet demand for vegetable oil will be filled by palm oil produced at plantations in Indonesia and Malaysia that have displaced indigenous people, erased critical wildlife habitat, and accelerated global warming by transferring millions of tons of plant- and soil-carbon into the atmosphere.

EPA can, and must, avoid these problems by making corresponding reductions to the annual volume requirements for advanced biofuels and total renewable fuels. Fortunately, by doing so, EPA would significantly postpone the blend wall problem.

In our recently submitted² comments on EPA’s proposed 2013 volume requirements rule, the Clean Air Task Force made the following points about the blend wall:

Volume Adjustments and the Blend Wall

A. The Blend Wall Creates Compliance Difficulty

In the proposed rule, EPA “request[s] comment on whether the blendwall presents any difficulty in terms of compliance with the RFS volume requirement in 2013.” 78 Fed Reg. at 9301/2. The answer is yes, but EPA can begin addressing that difficulty by making corresponding reductions to the advanced biofuel and total renewable fuel volume requirements when it adjusts the cellulosic biofuel requirement.

In a recently issued white paper, the House of Representatives Committee on Energy and Commerce referred to the blend wall, or “the limit at which ethanol can be readily added to the gasoline supply in order to comply with the RFS,” as “[c]hief among the challenges posed by the RFS.” EPA has determined that gasoline containing 15 percent ethanol, known as E15, can be safely used in model year 2001 and newer cars. The Agency ruled out the use of E15 in cars built before 2001, however. Automakers have warned that the use of E15 could

² CATF’s April 5, 2013 comments can be found at <http://www.catf.us/resources/filings/biofuels/>

void warranties, and gasoline retailers have been reluctant to sell the blend due to concerns about the likelihood of misfueling, the possibility that they could be held liable for engine damage, and the cost of installing specialized tanks and pumps.

Because many of the cars driven in the United States have not been cleared to use gasoline that contains more than 10 percent ethanol, the blend wall is effectively 10 percent and, according to the Energy and Commerce white paper, “approaching much faster than anticipated.” If the RFS continues to push more ethanol into the US market each year, more US cars will have to begin using E15 or higher blends like E85. Otherwise, writes the Committee, “the evidence suggests that it will not be possible for the nation as a whole to remain in compliance with the targets in the RFS.”

Early evidence of the blend wall’s impact on RFS compliance can be found in the market for RINs. The price of RINs has jumped dramatically in recent months, “zooming from a penny a gallon in December to more than \$1 in March,” reports Reuters.³ According to a market analyst quoted in a recent *Platts* article, “the real issue [behind the spike] is that you have obligated parties looking forward to 2014, where even with a carryover, it is unlikely that there will be enough D6 RINs available to meet the anticipated 14.4 billion gallon requirement at an E10 blend ratio.”⁴ Concerns about compliance in 2014 and beyond are negatively affecting the current RIN market and, as a result, complicating compliance in 2013.⁵

Accordingly, the answer to the question raised by EPA – “whether the blendwall presents any difficulty in terms of compliance with the RFS” – is yes: the blend wall is making compliance with the RFS more difficult. The difficulties will be less acute in 2013 than in subsequent years, but EPA can and should begin mitigating current and future problems by taking appropriate steps when it sets the volume requirements for this year.

³ “Key US senator blames speculators for high ethanol RIN price,” REUTERS. March 27, 2013 (<http://www.reuters.com/article/2013/03/27/usa-congress-ethanol-idUSL2N0CJOQY20130327>)

⁴ Gary Gentile, Shameek Ghosh, and Beth Evans, “Skyrocketing RIN prices signal ethanol blend wall imminent,” PLATTS. March 5, 2013 (<http://www.platts.com/RSSFeedDetailedNews/RSSFeed/Oil/6229745>)

⁵ The discussion about whether the surge in RIN prices is caused by “speculation” is beside the point; the RINs are being bought in response to blend wall-related concerns.

B. Blend Wall Difficulties Are Another Reason Not to Backfill the Cellulosic Void

EPA can postpone or even avoid a collision with the blend wall by making corresponding reductions to the advanced biofuel and total renewable fuel volumes when it adjusts the cellulosic requirement. Doing so will create additional time that can be used by EPA and other stakeholders to more effectively address the substantial concerns about E15 and other high-ethanol blends.

The cellulosic void will grow quickly over the next decade. If EPA addresses the void by reducing the advanced biofuel and total renewable fuel volume requirements by the same amount that it reduces the cellulosic volume requirement each year, it can substantially alleviate the pressure created by the blend wall. According to OECD and FAO, an RFS implementation strategy that makes corresponding reductions to the advanced and total renewable volume requirements would “lead[] to lower percentages of ethanol blended into the regular gasoline: the blend wall is not achieved in any year of the projection period and consequently there is no need to expand the fleet of flex-fuel vehicles.”⁶ In contrast, allowing advanced biofuel to backfill the cellulosic void would increase ethanol use 40% by 2021; ethanol blending would “reach the assumed blend wall limit from 2014 onward.”⁷

Allowing advanced biofuels to backfill the cellulosic void, as EPA has done in previous years and proposes to do in 2013, will strain the global agricultural sector in ways that will result in higher food prices and higher net GHG emissions. EPA’s proposed approach will also complicate RFS compliance and actualize many of the challenges associated with E15 and other high-ethanol blends. Consequently, the blend wall and its related complications is one more reason why EPA should not allow non-cellulosic advanced biofuels to backfill the cellulosic void.

It is worth reemphasizing the following points from the analysis by OECD and FAO:

- An RFS implementation strategy that makes corresponding reductions to the advanced and total renewable volume requirements would “lead[] to lower percentages of ethanol blended into the regular gasoline: the blend wall is not achieved in any year of the projection period and consequently there is no need to expand the fleet of flex-fuel vehicles.”
- Allowing advanced biofuel to backfill the cellulosic void would increase ethanol use 40% by 2021; ethanol blending would “reach the assumed blend wall limit from

⁶ OECD-FAO, *Agricultural Outlook 2012-2021* 98 (2012).

⁷ *Id.*

2014 onward.”

The OECD-FAO analysis is presented in Chapter 3 of *Agricultural Outlook 2012-2021*, which is attached to this response.

EPA’s Willingness to Address the Blend Wall

EPA will help answer the second part of the Committee’s question (“Is the existing EPA waiver process sufficient to address any concerns?”) when it announces its final volume requirements for 2013.

If EPA makes corresponding reductions to the annual volume requirements for “advanced” and conventional biofuels when it reduces this year’s cellulosic target, the Agency can alleviate some of the pressure on food prices and the environment. Keeping RFS-related demand for sugarcane ethanol and biodiesels in check would prevent concomitant increases in corn ethanol and palm oil production. And, most relevant to this inquiry, it would postpone the “blend wall” problem by effectively limiting the proportion of ethanol in gasoline to around 10 percent nationally.

If instead EPA declines to make reductions to the 2013 volume requirements for advanced biofuels and total renewable fuels and/or it fails to signal its intent to do in subsequent years, the authority that Congress granted to EPA to make such reductions⁸ should be viewed as functionally insufficient to address concerns related to the blend wall.

“If the RFS must be changed to avoid the blend wall...”

The Committee asks, “If the RFS must be changed to avoid the blend wall, what should these changes entail?” Congress could change Section 211(o)(7)(D)(i) of the Clean Air Act by replacing the term “may” with the term “shall” and deleting the phrase “or a lesser”. The revisions are shown below:

- (i) For any calendar year for which the projected volume of cellulosic biofuel production is less than the minimum applicable volume established under paragraph (2)(B), as determined by the Administrator based on the estimate provided under paragraph (3)(A), not later than November 30 of the preceding calendar year, the Administrator shall reduce the applicable volume of cellulosic biofuel required under paragraph (2)(B) to the projected volume available during that calendar year. For any calendar year in which the Administrator makes such a reduction, the Administrator ~~may~~ **shall** also reduce the applicable volume of renewable fuel and advanced biofuels requirement established under paragraph (2)(B) by the same ~~or a lesser~~ volume.

⁸ CAA §211(o)(7)(D)(i).



OECD-FAO Agricultural Outlook 2012-2021



Chapter 3

Biofuels

Biofuels were added to the *Outlook* in 2008 as an emerging sector that would increasingly affect agricultural markets. This has certainly turned out to be the case with currently some 65% of EU vegetable oil, 50% of Brazilian sugarcane, and about 40% of US corn production being used as feedstock for biofuel production. Today, it would be inconceivable to prepare an agricultural projection without taking biofuels into account. The biofuels chapter has been expanded this year to provide a more detailed description of the very complex US biofuel policy and an analysis of the policy options facing the US Environmental Protection Agency over the medium term.

Market situation

World ethanol prices (Figure 3.1) increased strongly in 2011 well above the levels of the 2007/08 highs in a context of strong energy prices, although the commodity prices of ethanol feedstock, mainly sugar and maize, decreased from their peaks in 2010. The two major factors behind this increase were the stagnating ethanol supply in the United States and a drop in Brazilian sugarcane production. Additionally, ethanol production was also significantly below expectations in developing countries having implemented mandates or ambitious targets for the use of biofuels.

World biodiesel prices (Figure 3.1) also increased in 2011. Contrary to the global ethanol market, production did not stagnate in 2011; the four major biodiesel producing regions (the European Union, the United States, Argentina, and Brazil) increased their supply compared to 2010. This increase was moderated by a decreasing biodiesel production in Malaysia (from about 1 BnL in 2010 to almost nothing in 2011).

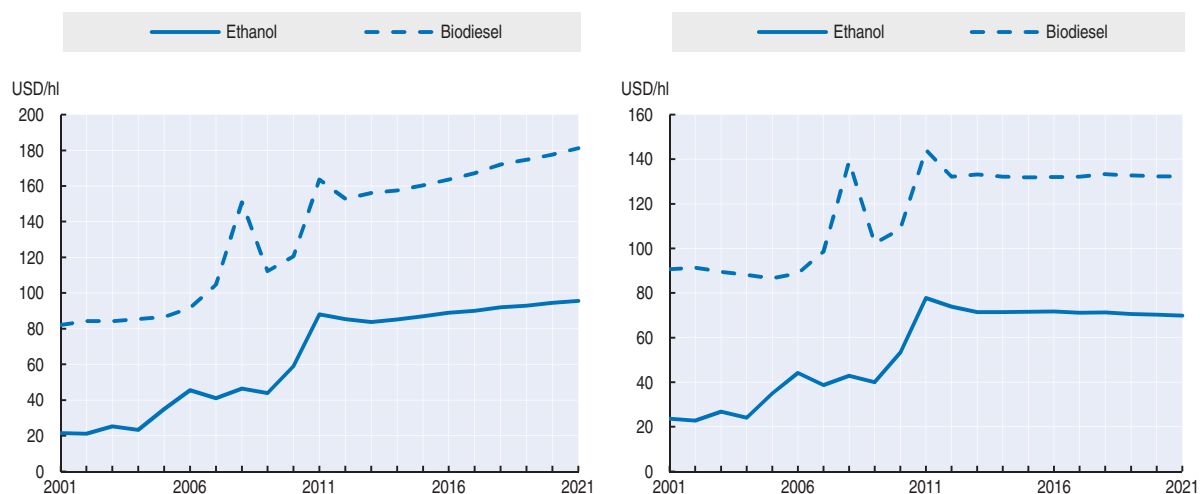
Projection highlights

- Over the projection period, ethanol and biodiesel prices are expected to remain supported by high crude oil prices and by the implementation and continuation of policies promoting biofuel use. Changes in the implementation of biofuel policies can strongly affect biofuel markets.
- Global ethanol and biodiesel production are projected to expand but at a slower pace than in the past. Ethanol markets are dominated by the United States, Brazil and to a smaller extent the European Union. Biodiesel markets will likely remain dominated by the European Union and followed by the United States, Argentina and Brazil.
- Biofuel production in many developing countries is projected to remain below expressed targets as the cultivation of non-edible crops to produce biofuels remains, in most cases, on a project or small-scale level and high prices of agricultural commodities do not encourage their use as biofuel feedstock.

- Biofuel trade is anticipated to grow significantly, driven by differential policies among major producing and consuming countries. The United States, Brazil and the European Union policies all “score” fuels differently for meeting their respective policies. This differentiation is likely to lead to additional renewable fuel trade as product is moved to its highest value market, resulting in potential cross trade of ethanol and biodiesel.

Figure 3.1. **Strong ethanol and biodiesel prices over the outlook period**

Evolution of prices expressed in nominal terms (left) and in real terms (right)



Notes: Ethanol: Brazil, Sao Paulo (ex-distillery), Biodiesel: Producer price Germany net of biodiesel tariff.

Source: OECD and FAO Secretariats.

StatLink  <http://dx.doi.org/10.1787/888932639362>

Market trends and prospects

Prices

World ethanol prices¹ increased strongly in 2011, well above the levels of the previous 2007/08 highs. In 2012, a slight drop is projected but the price is expected to stay constant in real terms after 2013 following the price paths of the two major feedstocks maize and sugar (Figure 3.1). However, ethanol prices are not expected to increase as much as the crude oil price is assumed to over the projection period to reflect recent trends of the ethanol to crude oil price ratio.

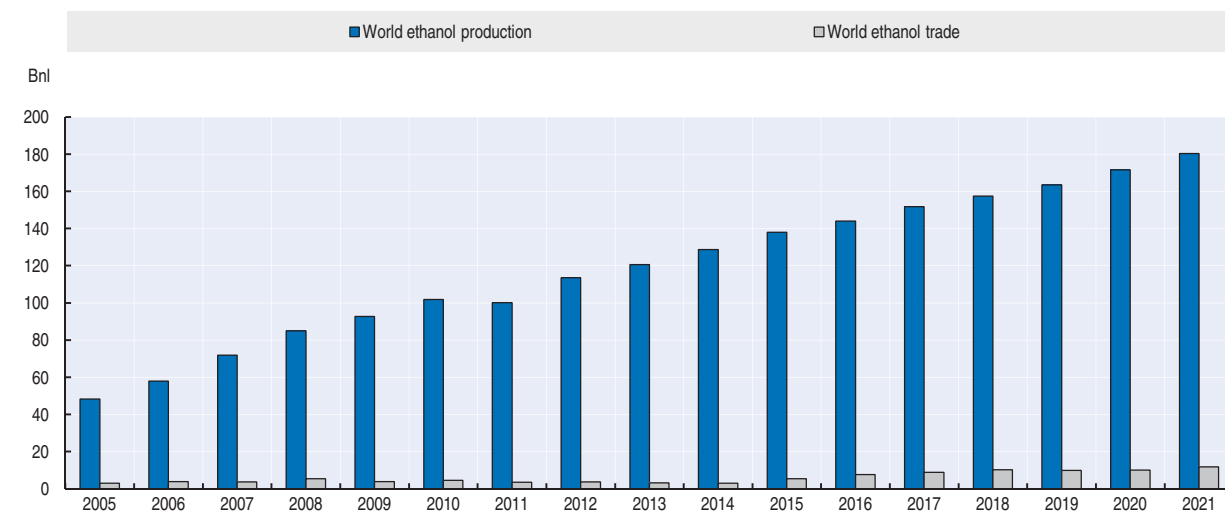
World biodiesel prices² have increased in 2011 as well in a context of rising vegetable oil prices and high crude oil prices. This increase was smaller than for the world ethanol price because biodiesel production did not stagnate in 2011. Comparable to ethanol prices, biodiesel prices are projected to decrease slightly until 2013 and stay constant in real terms thereafter; this is in line with major biofuel feedstock prices.

Production and use of biofuels

Global ethanol production is projected to almost double over the projection period when compared to the 2009-11 base period and to reach some 180 Bnl by 2021 (Figure 3.2). The three major producers are expected to remain the United States, Brazil and the European Union. Production and use in the United States and the European Union are mainly driven by the policies in place, namely the US Renewable Fuel Standard (RFS2) final rule and the EU Renewable Energy Directive (RED). The growing use of ethanol in Brazil is

linked to the development of the flex-fuel vehicle industry and the import demand of the United States to fill the advanced biofuel mandate. In the developing world, China should remain the main producer and user of ethanol with a production of 8 Bnl in 2011, projected to increase to 10 Bnl by 2021 (most of it is projected to be used for non-fuel applications), followed by India (4.2 Bnl in 2021).

Figure 3.2. **Development of the world ethanol market**

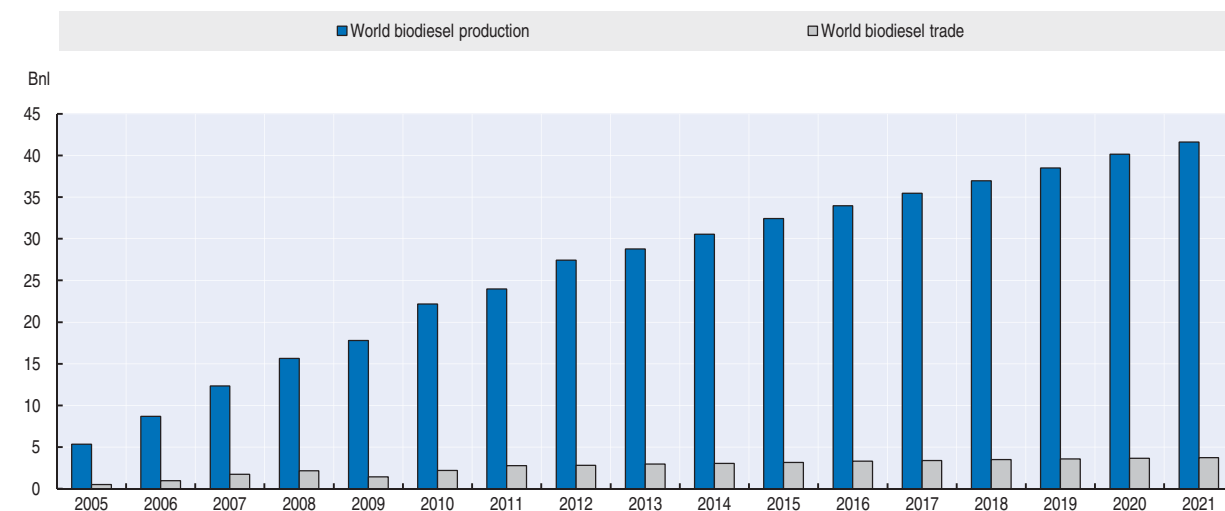


Source: OECD and FAO Secretariats.

StatLink <http://dx.doi.org/10.1787/888932639381>

Global biodiesel production is expected to increase to above 42 Bnl by 2021 (Figure 3.3). The European Union is expected to be by far the largest producer and user of biodiesel. Other significant players are Argentina, the United States, Brazil, as well as Thailand and Indonesia.

Figure 3.3. **Development of the world biodiesel market**



Source: OECD and FAO Secretariats.

StatLink <http://dx.doi.org/10.1787/888932639400>

To put in perspective the use of biofuel in total transport fuel use, Table 3.1 presents the projections for total transport and biofuel use both in energy and volume terms for a certain number of countries.

Table 3.1. Transport fuel use in major biofuel producing countries

		2009-2011			2021		
		Total	Of which: biofuel	Share of biofuel %	Total	Of which: biofuel	Share of biofuel %
Energy basis (1000toe)	Argentina						
	Gasoline type	3.5	0.1	2.7	4.1	0.1	3.4
	Diesel type	9	0.3	3.2	11	0.4	4.0
	Australia						
	Gasoline type	15	0.2	1.3	947	0.3	1.5
	Diesel type	16	0.5	3.1	18	0.5	3.1
	Brazil						
	Gasoline type	23	11.0	47.0	29	18.9	64.2
	Diesel type	40	1.6	4.0	54	2.4	4.6
	Canada						
	Gasoline type	30	0.8	2.6	32	1.1	3.4
	Diesel type	26	0.1	0.7	28	0.4	1.6
	China						
	Gasoline type	61	1.1	1.8	104	1.4	1.3
Volume basis (bnl)	EU						
	Gasoline type	103	2.8	2.7	103	8.6	8.3
	Diesel type	189	9.4	5.1	200	16.7	8.5
	USA						
	Gasoline type	409	21.9	5.4	412	45.0	10.9
	Diesel type	215	1.9	0.9	249	3.8	1.5
	Argentina						
	Gasoline type	4.7	0.2	4.0	5.4	0.3	5.0
	Diesel type	11	0.4	4.0	13	0.6	5.0
	Australia						
	Gasoline type	20	0.4	1.9	23	0.5	0.0
	Diesel type	19	0.6	3.9	22	0.7	3.8
	Brazil						
	Gasoline type	31	21.7	57.0	39	37.4	72.9
	Diesel type	48	2.1	5.0	64	3.2	5.7
	Canada						
	Gasoline type	40	1.6	3.8	42	2.1	5.0
	Diesel type	31	0.2	0.8	33	0.6	2.0
	China						
	Gasoline type	81	2.2	2.7	137	2.7	2.0
	EU						
	Gasoline type	137	5.5	4.0	136	16.9	12.0
	Diesel type	225	12.5	6.3	239	22.0	10.4
	USA						
	Gasoline type	541	43.4	7.8	545	89.1	15.5
	Diesel type	257	2.5	1.1	298	5.0	1.9

Source: OECD and FAO Secretariats.

StatLink  <http://dx.doi.org/10.1787/888932640540>

Developed countries

With a global production share of about 50% in 2011, the United States is currently the biggest ethanol producer. The development of US biofuel markets has taken off since the enactment of the Energy Independence and Security Act of 2007 (EISA).³ The implementation of this policy is made by the Environmental Protection Agency (EPA) through annual rules setting the levels for different fuel types. The Annex of the biofuel chapter provides a detailed description of US biofuel policies and, in particular, of the nested structure of quantitative minimums in place. An analysis of different implementation options is provided in the last section of the chapter. Current technological developments seem to suggest that the cellulosic biofuel mandate as it is currently regulated by the EPA is unlikely to be met by 2022.

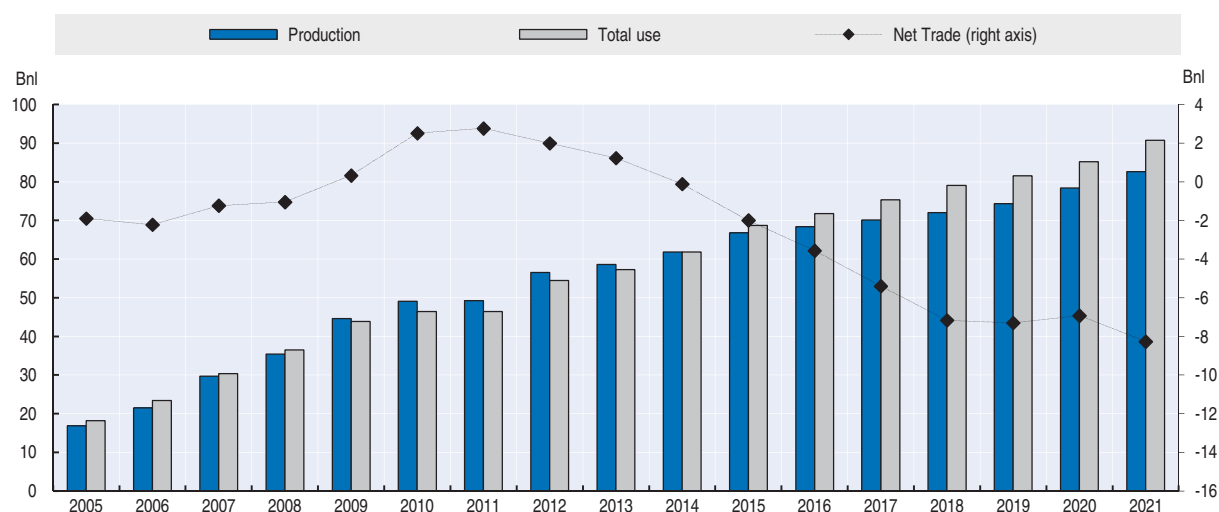
It was assumed in the baseline that the production of cellulosic ethanol would rise steadily over the course of the outlook period to reach 16 Bnl by 2021, i.e. only about 30% of the cellulosic biofuel mandate.⁴ EPA announcements for 2012 are incorporated in the baseline projections. For 2013 and remaining years of the projection period, the assumptions were made that the conventional ethanol gap would stay at the quantities in the legislation and that the other advanced gap could not shrink from year to year following the shortfall in cellulosic biofuels, i.e. that the total and advanced mandates would be reduced in parallel.⁵

This adjusted total US biofuel mandate would amount to 96 Bnl in 2021. As the total biofuel mandate is projected to be binding throughout the projection period, ethanol use in the US is projected to follow the path of this mandate when subtracting the biodiesel mandate and reaches almost 90 Bnl (Figure 3.4). However, because of the high crude oil price, conventional ethanol production mostly based on coarse grains would be above the conventional gap.⁶ Concerning the blend wall,⁷ the EPA provided a decision in January 2011 to expand the ethanol blending percentage in regular gasoline from 10% to 15% expressed in a volume share for cars built in 2001 or later. At present, gasoline retailers are not ready to propose different types of gasoline to their customers because of logistics, warranties on motors as well as liability issues. It is assumed in the baseline projection that this issue will be resolved allowing cars built before 2001 to gradually disappear from the roads so that the full use of the 15% blend fuel would be reached at the end of the projection period. The assumed effective blend wall would be reached by 2017.⁸ To meet the mandates, a slight expansion of the fleet of flex fuel vehicles is expected towards the end of the projection period.

The mandate for biodiesel defined in the RFS2 is extended from 3.8 Bnl to 4.8 Bnl to be used by 2012, driving the initial growth in US biodiesel use. Biodiesel production from tallow or other animal fat is expected to represent an important share of US biodiesel production. Because of relatively high ethanol Renewable Identification Numbers (RIN) prices, biodiesel production is expected to surpass the biodiesel mandate to reach 5 Bnl in 2021.

The RED⁹ of the European Union requires that renewable fuels should increase to 10% of total transport fuel use by 2020. The RED allows for substitution with other renewable sources including electric cars. In that context, when adding together the energy content of ethanol and biodiesel, the Outlook assumes that only a 9.5%¹⁰ share of renewable fuels can be reached by 2021.

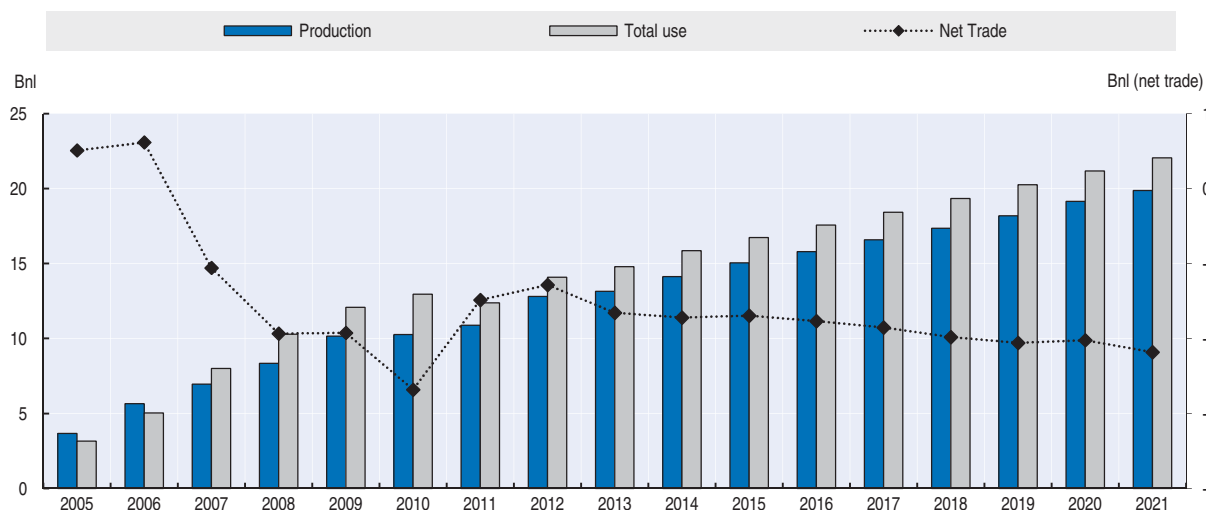
In that context, fuel ethanol production mainly from wheat, coarse grains and sugar beet is projected to reach 16 Bnl in 2021 and ethanol fuel consumption amounts to an

Figure 3.4. **Projected development of the US ethanol market**

Source: OECD and FAO Secretariats.

StatLink  <http://dx.doi.org/10.1787/888932639419>

average share of 8.3% in gasoline type transport fuels. Second generation ethanol is not assumed to play a major role throughout the projection period. Stimulated by mandates and tax reductions in European Member States, total biodiesel use is projected to reach 22 BnL by 2021 (Figure 3.5) representing an average share of biodiesel in diesel type fuels of 8.5%. Domestic biodiesel production should increase to keep pace with demand. Second generation biodiesel production is assumed to reach about 4 BnL in 2021.

Figure 3.5. **Projected development of the European biodiesel market**

Source: OECD and FAO Secretariats.

StatLink  <http://dx.doi.org/10.1787/888932639438>

Canadian mandates require an ethanol share of 5% in gasoline type fuel use and a biodiesel share of 2% in diesel type fuel and heating oil use, both expressed in volume terms. Both mandates are projected to be filled; ethanol and biodiesel uses should grow in

line with gasoline and diesel consumption. In Australia, the ethanol and biodiesel shares respectively in gasoline and diesel type fuel use are expected to remain almost unchanged over the projection period mostly driven by policies in place in two states (New South Wales and Queensland).

Developing countries

Within the last few years, several developing countries have implemented ambitious biofuel targets or even mandates. Their motivations are based mainly on two aspects: achieving a high level of energy supply security and/or independence and increasing domestic value added. However, the fuel production from promising feedstock such as *jatropha* or cassava are currently still on a project or small-scale level, far below the envisaged production levels. Rising biofuel feedstock prices provide strong incentives for exportation of agricultural raw products. This hampers the development of a domestic biofuel industry significantly; additionally, limited resources restrict the ability of governments to implement policies by supporting domestic production and use of biofuels through financial incentives. Subsequently the fill-rates of mandates and targets in several developing countries remain low.

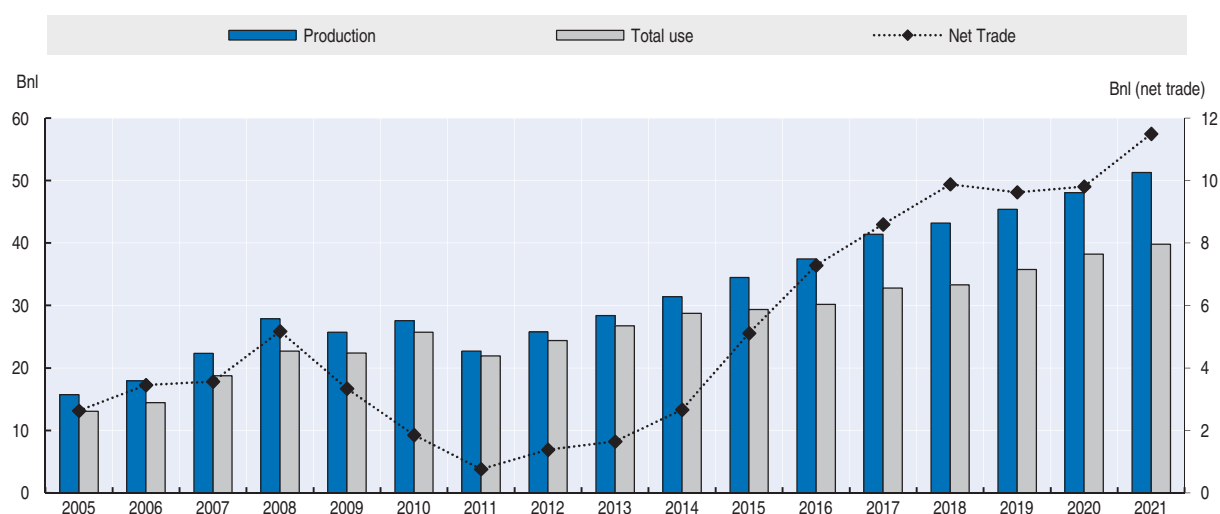
Countries which already have a high potential for sugarcane and molasses production, such as India, Thailand, Colombia and the Philippines, or vegetable oil production such as Malaysia, Indonesia and Thailand, are expected to produce and use more ethanol and biodiesel over the projection period. However, it is very likely that, except for Brazil and Argentina, biofuel use in developing countries remains significantly below the targets/mandates and an export oriented biofuel industry does not develop anywhere.

Brazil is projected to be the second largest ethanol producer. Brazilian ethanol derived from sugarcane should reach 51 Bnl and represent 28% of global ethanol production in 2021. One characteristic of the Brazilian ethanol industry is that it is very flexible. The sugarcane industry can quickly switch between sugar and ethanol production. Domestic ethanol demand is driven by the relative price ratios between ethanol and gasoline and between sugar and ethanol. It shifts with the growth of the flex-fuel vehicles fleet as well as the percentage of ethanol blended into gasoline. Brazilian ethanol domestic use is expected to increase over the projection period to reach 40 Bnl in 2021 (Figure 3.6). This growth is mainly driven by the growing fleet of flexi-fuel vehicles.¹¹


Argentina has a biodiesel domestic use target (7% in volume share). However, most of its biodiesel production is planned to be exported due to the incentives offered by the differential export tax system. It will be the largest biodiesel producer in the developing world (4.2 Bnl in 2021). Driven by a domestic biodiesel consumption mandate, biodiesel production in Brazil should reach 3.2 Bnl.

Trade in ethanol and biodiesel

Global ethanol trade is set to increase strongly. While international trade represented on average about 4% of global production in the previous decade, the outlook projects it to increase to about 7% by 2021 (4.5 Bnl to 12 Bnl). Most of this increase is due to ethanol trade between Brazil and the United States. In 2021, the United States is expected to import about 16 Bnl of sugarcane based ethanol from Brazil which is assumed to be the cheapest alternative to fill the advanced biofuel mandate.¹² At the same time Brazil is projected to import 7.5 Bnl corn based ethanol from the United States to satisfy the flexfuel demand. Despite some tariffs, the European Union should increase imports by 2 Bnl of ethanol over

Figure 3.6. **Projected development of the Brazilian ethanol market**

Source: OECD and FAO Secretariats.

StatLink  <http://dx.doi.org/10.1787/888932639457>

the projection period while some countries like Thailand, Pakistan or South Africa increase their export supply only marginally. Recently, the two major palm oil producers, Indonesia and Malaysia have developed flexible refining capacities that enable them to quickly switch to biodiesel production for export once the relative prices become favourable. Yet given the expected price ratio in the coming decade, biodiesel trade is projected to increase only slightly with Argentina remaining the major exporter due to its differential export tax system.

Feedstocks used to produce biofuels

Coarse grains are projected to remain the dominating ethanol feedstock but the share of coarse grains based ethanol production in global ethanol production is projected to 44% by 2021. By then, 14% of global coarse grain production should be used to produce ethanol by 2021. The sugarcane based ethanol share in global ethanol production should increase from 23% in 2009-11 to 28% in 2021. By 2021, 34% of global sugarcane production is expected to be used for ethanol production. While the share of ethanol produced from wheat and molasses should decrease, cellulosic ethanol is projected to take a global share of almost 9.5% – almost all stemming from production in the United States.

The share of biodiesel produced from vegetable oil in global biodiesel production is expected to decrease by 10% over the projection period down to 70%. Sixteen per cent of global vegetable oil production should be used to produce biodiesel by 2021. Second generation biodiesel production is projected to increase slightly over the projection period, mainly coming from the European Union.

Main issues and uncertainties

Global issues

The development of biofuel markets over the past few years has been strongly related to the level of crude oil prices, biofuel policy packages in place, and the macroeconomic environment. This Outlook is marked by the assumption of strong energy prices which

favour the development of biofuels. A scenario on the effect of a lower crude oil price is presented in the Overview. It shows that if the crude oil price was lower by 25% on average over the projection period, the world ethanol price would be on average 12% lower and the world biodiesel price would be 5% lower on average.

The first generation of biofuels produced from agricultural feedstocks could be progressively replaced in the future by advanced biofuels produced from lignocellulosic biomass, waste material or other non-food feedstocks. The pace of this transition will depend on profitability expectations determining industry investment decisions and private R&D research and development efforts as well as on the biofuel policy framework which determines public spending and provides guidelines for the private sector. This *Outlook* remains very cautious on the medium-term potential of second generation biofuels. No specific assumptions have been made on the development of other advanced biofuels including drop-in fuels¹³ such as bio-butanol. The conversion of some ethanol facilities in Brazil and the United States into bio-butanol facilities is currently in the pipeline, although potential associated environmental and safety problems still need to be resolved. Important investments are currently being made on these advanced biofuels, especially in the defence sector. Advancements should be monitored as they could displace many of the projected paths presented in this *Outlook*.

The sustainability criteria embedded in the US and European biofuel policies are expected to increasingly affect biofuel markets. In the coming years, biofuel producers will have to comply with GHG emission targets. This could limit the availability of imported biofuels or biofuel feedstock. Given the steadily increasing amount of agricultural commodities used as biofuel feedstocks it is expected that regulations set forth by biofuel policies will shape not only biofuel markets but all agricultural commodity markets.

The rest of this section presents a quantitative analysis of the uncertainties around the implementation of US biofuel policies. It is complemented by a description of US biofuel policies presented in the Annex of the chapter.

Implementation of US biofuel policies

Baseline assumptions concerning the implementation of US biofuel policies can be challenged as implementation possibilities open to the EPA are numerous. Until now, the yearly decisions taken by EPA did not have important impacts on agricultural and biofuel markets because the level of the cellulosic ethanol shortfall was small. But by 2021, the end of this *Outlook*, the amounts will be much larger and EPA's decision will likely have impacts on agricultural markets. This section identifies the effect of three alternative implementation options (as described in Annex 3.A1):

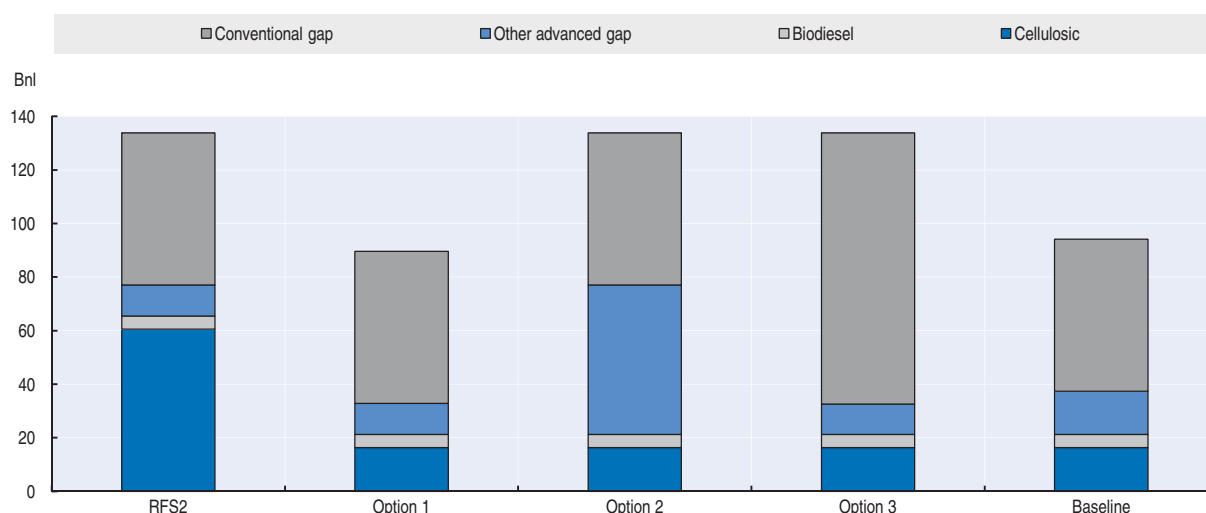
- Option 1: Lower the total and advanced mandates by the shortfall in the cellulosic mandate; EPA has not so far chosen this option which could seem to be the “simplistic” one.
- Option 2: Maintain both the advanced and total mandates, i.e. increase the other advanced gap. This is the option that has been chosen by the EPA. This scenario provides some insights regarding the sustainability of such an implementation option, especially when focusing on the interactions between US and Brazilian ethanol markets.
- Option 3: Maintain the total mandate and lower the advanced mandate by the shortfall in cellulosic production, i.e. increase the conventional gap. Maize based ethanol production is expected to exceed the conventional ethanol gap in baseline projections especially in

the latter years of the projection period when the conventional gap cannot exceed 56.8 Bnl. This scenario highlights the effects on international markets of the nested structure of US biofuel mandates.

The assumptions regarding the implementation of US biofuel policy in the baseline and in the three envisaged scenarios for 2021 are summarised in Figure 3.7. Scenarios were conducted after the completion of the revision of the US biofuel module of the AGLINK-COSIMO model, which captures the complex interplay of the different mandates, a simplified market of Renewable Identification Numbers (RINs) as well as the possibility to transfer these RINs between two years (i.e. roll-over). Scenario results are presented in Table 3.A2.1.

The decision taken by EPA will not be reflected fully by any of the scenario options. Those scenarios have been produced to illustrate the policy space, not to promote any particular policy option. This analysis focuses in different sub-sections on the impacts of the scenarios in comparison to baseline projections on ethanol markets (United States, Brazilian, European and global), on biodiesel markets and on agricultural markets. The last section provides key conclusions.

Figure 3.7. **Structure of US biofuel mandates in the law (RFS2), the baseline and the 3 options for 2021**



Source: OECD and FAO Secretariats.

StatLink <http://dx.doi.org/10.1787/888932639476>

Impacts on US ethanol market

This section illustrates the key impacts in terms of supply, use, net trade and prices of the three implementation options on the US ethanol market. Results are summarised in Figure 3.A2.1. The three scenario options underline the fact that the US ethanol market – on the supply side as well as on the demand side – can adjust relatively easily to policy changes and to world price variations. On the demand side, the blend wall issue¹⁴ is a major constraint for further expansion in ethanol use. An increase in the size of the flex-fuel vehicles is expected to be the most plausible outcome if the total mandate was to remain at the level defined in EISA towards the end of the projection period.

Option 1

With this implementation option, the total and advanced mandates are lowered by the shortfall in meeting the cellulosic ethanol mandate which keeps the conventional ethanol and other advanced fuel gaps unchanged from original levels. In 2021 the need for ethanol imports from Brazil to meet the other advanced gap is 30% lower than in the baseline, which leads to a 2% decrease of the world ethanol price. United States conventional ethanol production is projected to still exceed the conventional gap, but to be reduced by 1% in 2021 when compared to the baseline, in line with the reduction of the ethanol producer price. Option 1 leads to lower percentages of ethanol blended into regular gasoline: the blend wall is not achieved in any year of the projection period and consequently there is no need to expand the fleet of flex-fuel vehicles.

Option 2

In this case, EPA would maintain both the advanced and total mandate. This would result in the widening of the other advanced gap and in an important increase of advanced ethanol imports, i.e. imports of sugarcane based ethanol from Brazil. Those would reach 51 Bnl in 2021, compared to 16 Bnl in the baseline. This additional demand for advanced biofuels on world markets triggers a 17% higher world ethanol price in 2021 when compared to the baseline which is transmitted in part to the US ethanol producer price. In 2021, conventional ethanol production is expected to exceed baseline levels by 10%; this additional production would be largely exported to Brazil (see next section). On the demand side, Option 2 leads to ethanol use being 40% higher in 2021 than in the baseline. Ethanol blended into regular gasoline is expected to reach the assumed blend wall limit from 2014 onwards. Additional ethanol use should come from the development of the fleet of flex fuel vehicles which leads to a lower ratio between ethanol consumer price and gasoline consumer price induced by higher RIN prices.

Option 3

This option would mean that the other advanced gap would be kept fixed by reducing the advanced mandate by the same amount as the shortfall in cellulosic fuels while maintaining the total mandate. The conventional ethanol gap would exceed the baseline level by more than 70% in 2021, reaching 97 Bnl. Conventional ethanol production would not be able to reach the mandate despite being 40% above the baseline in 2021¹⁵ – the ethanol producer price exceeds baseline levels by 40% – and US ethanol exports outside North America would be close to zero. To meet the global mandate, the United States would have to import ethanol. The world ethanol price in 2021 is projected to be 6% above the baseline level. This disparity in the movement of the Brazilian and US ethanol price is caused by the passage of the US price from the export floor (world price minus transport cost) to the import ceiling (world price plus transport cost plus a small *ad valorem* tariff) basis.¹⁶ On the demand side, Option 3 leads to a situation very similar to Option 2 because the total mandate that has to be consumed is the same: ethanol blended into regular gasoline is expected to reach the assumed blend wall limit from 2014 onwards and additional ethanol use should come from the development of the flex fuel vehicle fleet. However, a stronger increase in biodiesel production leads to an ethanol consumption increase of only 38% compared to 40% in Option 2.

Interactions between the US and Brazilian ethanol markets

The different EPA implementation options analysed in this section have major implications for US import demand of ethanol able to qualify for the advanced biofuel mandate. Currently, the only ethanol type qualifying and being produced on a large scale is from sugarcane. In the outlook period, Brazil is the sole country that has the capacity and the flexibility to respond to strong additional demand from non domestic markets.¹⁷ This means that the three implementation options have direct effects on Brazilian ethanol and sugar sectors.

Figure 3.A2.2 illustrates the most important interactions between the US and Brazilian ethanol markets. US ethanol imports directly impact Brazilian ethanol exports. In Brazil, the expansion/contraction of ethanol exports are due to several inter-related factors on the domestic market: expansion/contraction of domestic ethanol production and thus of sugarcane and sugar production, but also shifts in domestic ethanol demand through the adjustment of the car fleet as well as possibilities of ethanol re-imports from the United States.

Option 1

In the case of Option 1, US ethanol import demand is reduced. It is interesting to note that Option 1 has hardly any effects on the Brazilian and the world sugar markets when compared to baseline levels. Although ethanol exports to the United States are 30% lower in 2021, ethanol production in Brazil is only reduced by 3%, reducing sugarcane area by 2% while domestic consumption with a rising flex-fuel fleet increases by 3%. However, the lower sugarcane production does not have a visible impact on sugar production given the flexibility of the Brazilian sugar industry.

Option 2

Option 2 is associated with the strongest increase in US ethanol import demand when compared to baseline levels in 2021. This additional demand of about 35 Bnl induces larger Brazilian ethanol production by only about 10 Bnl. The rest will become available because of lower Brazilian consumption and higher imports from the United States.

Impact on Brazilian sugar markets: To produce more ethanol, the Brazilian sugarcane area is extended by 9% when compared to the baseline and the share of sugarcane used for biofuel production is increasing at the expense of sugar production. On the domestic Brazilian sugar market, lower sugar production implies higher domestic sugar prices, a lower sugar demand and a significant decrease of sugar exports. As a consequence, world sugar prices in Option 2 are 6% above baseline levels in 2021.

Impact on Brazilian ethanol use: Brazilian ethanol demand in a context of higher prices is expected to decrease considerably when compared to baseline levels in 2021. This decrease can be decomposed into two components:

- Low blend demand is reduced to the minimum blending requirement (18% of total fuel consumption on an energy equivalent basis).
- Ethanol used by flex-fuel vehicles is reduced to 21% of total fuel consumption – the 2011 level – compared to 41% in the baseline.

Ethanol imports from the United States: To meet domestic demand – even if it is much lower than in the baseline – in a context of tremendous increase¹⁸ of Brazilian ethanol exports, Brazil needs to import some ethanol. Imports are projected to reach 18 Bnl, to a large extent originating from the United States where, in turn, the maize based ethanol production is stimulated by high ethanol prices. So Option 2 would create a large policy driven two-way trade in ethanol.

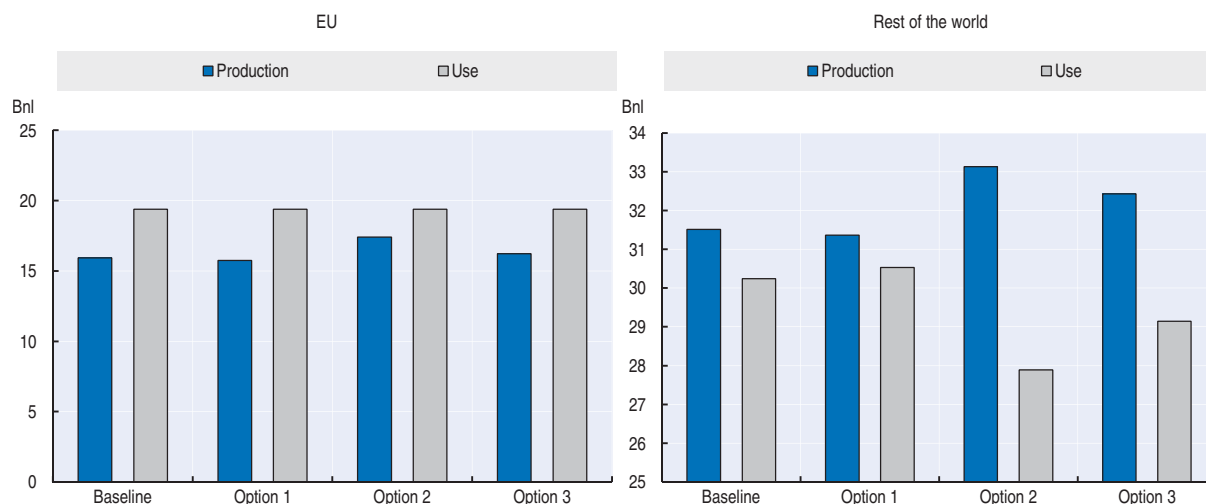
Option 3

The same argumentation can be built for Option 3. However, impacts on Brazilian ethanol and sugar markets are lower as US import demand is only 11% higher than in the baseline case in 2021. With much higher requirement for other conventional ethanol, the price of ethanol in the United States increases to levels eliminating the possibilities of exporting any ethanol outside North America. Brazil replaces this amount (close to 7 Bnl in the baseline) by domestic production and increases exports to the United States.

Implications on global ethanol production

The impacts of the scenarios on the European Union are only visible on the supply side, because consumption is bound by the EU mandate. In Option 2, with high world ethanol prices and a lot of competition on the world market, EU ethanol production is increasing by 9% (Figure 3.8). In the rest of the world, the supply and demand responses follow the world price incentives. In Option 2, China, India, Thailand and Canada make more than 50% of the production increase and even more in Option 3, where Canada shows the strongest supply increase given the tight connection to the US ethanol market. Consumption changes mainly take place in China, Thailand and Ukraine.

Figure 3.8. **Global ethanol market effects**



Source: OECD and FAO Secretariats.

StatLink  <http://dx.doi.org/10.1787/888932639495>

Implications on biodiesel markets

Given the implicitly strong increases in RIN prices for ethanol in Options 2 and 3, biodiesel is likely to become more competitive against ethanol to meet the advanced mandate. In Option 2, US biodiesel production and use are increasing by about 50% to

7.5 BnI when compared to the baseline. They increase even more in Option 3 where they reach 8 BnI. Effects on global biodiesel markets are quite low, as the US biodiesel net trade position does not change considerably in the scenarios when compared to the baseline. In that context, the world biodiesel price does only increase slightly.

Implications on other agricultural sectors

The increasing production of ethanol from sugarcane and from coarse grains in Options 2¹⁹ and 3 is sufficient to generate significant impacts on the other sectors, which is not the case for Option 1. Therefore, only Options 2 and 3 are reflected in this section. The impacts are summarised in Figure 3.A2.3.

Impacts on biofuel feedstock sectors

The starting point is obviously an increase in the demand for coarse grains and for sugarcane by the ethanol producers by 11% and 20% respectively in Option 2 and by 35% and 3%, respectively, under Option 3. This leads to an increase in the world price of coarse grains and sugar of 5% and 6%, respectively, in Option 2 and of 16% and 4% in Option 3. Many factors are mitigating the price impact and in particular the strong reduction in consumption of ethanol by flex fuel cars in Brazil and an increase in coarse grains and sugarcane production by 1% and 6% in Option 2 and by 2.5% and 0.5% in Option 3.

Overall, the larger amount of coarse grains consumed by ethanol producers (20 Mt and 64 Mt respectively in Option 2 and 3) is accounted for in the model by a larger production, increase in distiller's dry grain (DDG) production (5 Mt and 20 Mt) and by a reduction in the amount consumed by human either directly or indirectly through non-ruminant meats. Basically, the reduction in human consumption represents less than 50% of the additional demand by ethanol producers in Option 2 and Option 3. In the case of sugarcane, 80% of the additional amount used by ethanol producers is accounted for by larger production and 20% by lower sugar consumption in Option 2. In Option 3, these percentages are 41 and 59, respectively.

Impact on other sectors

The increase in the world coarse grains price affects many other sectors. First, through demand and supply substitution, it leads to a higher price of wheat and oilseeds by 2% in Option 2 and by 5% and 4% in the case of Option 3. The higher oilseed price reduces crush demand leading to lower supply of protein meal and vegetable oil. This combined with substitution on the feed demand side lead to a significant increase in the price of protein meal by 2% and 5% in Options 2 and 3 respectively.

The increasing price of feed generates a reduction in supply and production of non-ruminant meats. World pigmeat and poultry production falls respectively by 0.1% and 0.2 % in Option 2 and by 0.2% and 0.7% in Option 3. This leads to higher price and lower consumption of these meats. Taking the Pacific market as an example, the price of pork is 2% higher in Option 2 and 7% higher in Option 3. The US price of poultry increases by about the same percentage.

Considering the smaller share of feed in the variable cost of producing beef and the longer production cycle, the impact on the beef sector is different. In fact, the increasing demand for beef generated by the higher price of pork and poultry crosses the lower supply

generated by the higher feed prices at a point leading to higher price and to a small increase in world production by 0.1% and 0.3% in Options 2 and 3.

The impact on the fish sector is also different since capture and raised molluscs, the largest share of supply, are not directly influenced by feed prices. On the other hand, demand for fish as food is entirely influenced by the movement in meat prices. Another important point is that China, which counts for 61% of world aquaculture production, is not strongly tied to the movement in the world price of coarse grains. Chinese coarse grain price is only 3% higher in Option 3 compared to a 16% increase for the world price. The combination of all these elements and world capture being mostly controlled by production quotas, leads to a small impact on production. For aquaculture production, the increasing price caused by the larger demand generated by higher meat prices compensates for the increasing feed cost.

Key conclusions of the scenarios

Option 1 (the total and advanced mandates are lowered by the shortfall in the cellulosic mandate), does not differ much from the baseline except from the fact that low blend ethanol use in the United States would not reach the blend wall in any years and that the United States would be less dependent on advanced ethanol imports.

Option 2 analysed in this section corresponds to maintenance of the actual policy of the EPA: both the advanced and total mandates are kept at the EISA level. The main conclusions of Option 2 compared to baseline projections are the following:

- Important policy driven two-way ethanol trade emerges between Brazil and the United States.
- Spill-over effects are expected in the coarse grains market as ethanol trade is completely free between the United States and Brazil, but the impact on the world price of coarse grains is not expected to be large.
- The largest adjustment will come from a severe reduction in consumption of ethanol by flex fuel cars in Brazil, i.e. the improvement in the US energy independence would be partly achieved through a reduction in Brazil's energy independence.
- The potential increase in sugarcane production is sufficient to prevent a large increase in the sugar price.

If, on the contrary, the EPA decides to reduce as well the advanced mandate without changing the total mandate as is the case in Option 3, then the impact on the coarse grains markets will be much larger. This is due to the fact that the US ethanol price will be much higher because it will go from an export floor price basis to an import ceiling. Not surprisingly, this will put even more upward pressure on the price of coarse grains. The main conclusions of this scenario are the following:

- US ethanol exports outside North America disappear and imports from Brazil driven by price advantage increase significantly.
- World coarse grains price is almost 16% higher in 2021, compared to the baseline.
- About half of the coarse grains or sugarcane used to produce the additional ethanol is derived from lower human consumption, taking into account additional production and the greater availability and use of DDGs.

- Quantities of food consumed around the world are somehow similar but at higher prices. Option 3 would put even more pressure on countries where food expenditure already accounts for a large share of income.
- The reduction in feed demand comes entirely from the non-ruminant meat sectors.

Finally, the impacts of the decisions to be taken by the EPA concerning the implementation of the US biofuel policy in the coming years are not fully reflected by the scenario options presented. However, it is clear from this analysis that the impacts will vary according to the decisions taken, that they are likely to be important, and that they will affect not only the biofuel sector in the United States but more broadly the global biofuel and agricultural markets. The implementation decision will have an impact on world ethanol and agricultural commodity prices. It will require some adjustment in terms of ethanol production and consumption patterns, as well as in terms of ethanol feedstocks use around the world.

Notes

1. Brazil, Sao Paolo (ex-distillery).
2. Producer price Germany net of biodiesel tariff.
3. Energy Independence and Security Act of 2007, Public Law 110-140 (2007) www.gpo.gov/fdsys/pkg/PLAW-110publ140/pdf/PLAW-110publ140.pdf.
4. Cellulosic ethanol production is an exogenous model component.
5. The total and advanced mandates are reduced by about 90% of the difference between the assumed applied and the legislated cellulosic biofuel mandate at the end of the projection period.
6. The conventional gap is the difference between the total mandate and the advanced mandate, see Annex 3.A1 for more explanations.
7. For more information on the blend wall, see Annex 3.A1.
8. In baseline assumptions, the blend wall is gradually extended from 10% to 15% over the projection period (accounting for the disappearance of older vehicles and for the resolution of logistic problems by blenders). These assumptions result in an assumed effective blend wall slightly lower than E15 in all years of the projection period except 2021. For example, it is assumed that the maximum ethanol blending percentage in regular gasoline would be of 13% in 2017.
9. eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF.
10. This percentage takes into account the fact that the contribution of second generation biofuels will be counted twice toward the EU RED mitigation targets.
11. Currently, gasoline prices in Brazil are not allowed to exceed a certain cap value. The Outlook assumes that this cap will be adjusted upwards given rising energy prices so that the driving ethanol/gasoline price ratio remains slightly in favour of ethanol.
12. According to the RFS2, sugarcane based ethanol is classified to be an advanced biofuel, while maize based ethanol is not.
13. Drop-in fuels are defined as renewable fuels that can be blended with petroleum products, such a gasoline, and utilised in the current infrastructure of petroleum refining, storage, pipeline and distribution.
14. Vehicles produced in 2001 or later are allowed since 2011 to use blends up to 15% ethanol. Annex 3.A1 contains a specific section on the blend wall and associated constraints on US biofuel demand.
15. In Option 3, in 2021, 53% of US coarse grains production would be consumed by ethanol producers.
16. US imports in Option 2 occur even if Brazilian ethanol prices are high because of the classification of sugarcane based ethanol as advanced biofuel. The US ethanol price, which can be interpreted as the conventional ethanol price, is therefore tight to the marginal quantity of US ethanol exported.

In Option 3, exports completely disappear and Brazilian sugar-cane ethanol exports now compete inside the conventional gap.

17. Other producers in the world are also reacting to a smaller extent to the higher ethanol price and mitigate some of the shortfall on the world market created by the US policy.
18. In 2021, Brazilian exports that qualify for the US advanced mandate are projected to be more than 260% higher than in the baseline.
19. All impacts reported are with respect to the baseline for the last year of the Outlook period, i.e. 2021.

ANNEX 3.A1

US biofuel policy

Biofuel policies in the United States are entering a new phase as the long standing blenders credits on ethanol and biodiesel and the tariff on imported ethanol expired at the end of 2011 and mandated quantities of biofuels continue to expand.

The expiration of the ethanol blenders credit of USD 0.45 per gallon (USD 0.12 per litre) with an offsetting USD 0.54 per gallon (USD 0.14 per litre) import tariff and the USD 1.00 per gallon (USD 0.26 per litre) blenders credit on biodiesel ends a decade's long policy of subsidisation to mix the renewable fuels into general motor fuel use.¹ The unique producers' credit for cellulosic biofuels of USD 1.01 per gallon (USD 0.27 per litre) is set to expire at the end of 2012. While there are calls for renewal of the credits, and it has happened in the past (even retroactively), as of the writing of this text the credit paid for by US taxpayers has expired. What remains is a system of mandates on blenders for inclusion of four classes of renewable fuels, total, advanced, bio-based diesel and cellulosic biofuels, into broader petrol and distillate use.

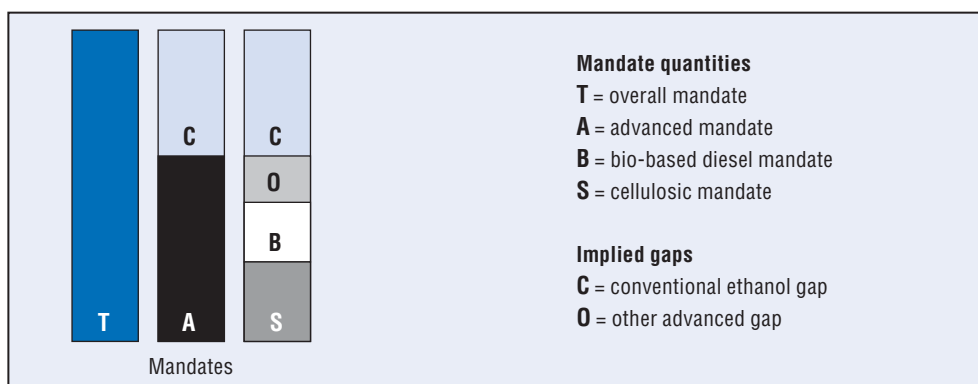
US biofuel mandates

The mandates on blenders represent their share of the calendar year quantitative national mandates laid out in the Energy Independence and Security Act of 2007 (EISA).² The mandates are segmented into four classes presented in Figure 3.A1.1 based on the fuel's feedstock and its estimated greenhouse gas (GHG) reduction score relative to the 2005 base level as specified in EISA but are not independent of each other; they are a nested structure of quantitative minimums.

The overarching total mandate (T) requires fuels to achieve at least a 20% GHG reduction. Advanced fuels (A), as specifically defined in the legislation, are fuels which achieve a 50% greenhouse gas reduction score, ethanol derived from sugar is explicitly defined as an advanced fuel. Of that advanced mandate, a minimum quantity must come from bio-based diesel fuels (B), a distillate replacement with a 50% GHG reduction score, and cellulosic renewable fuels (S), either petrol or distillate replacement fuels, with a 60% green house gas reduction score.

The biodiesel and cellulosic minimums leave another advanced gap (O), the difference between the advanced mandate and the minimum that must come from cellulosic fuels and biodiesel, which can be met with fuels such as sugar based ethanol or excess biodiesel (B) and cellulosic fuel (S) consumption.

The conventional gap (C), the difference between the total mandate and the minimum that must come from advanced fuels, is then the portion of the total mandate that could

Figure 3.A1.1. **Mandated quantities and implied gaps**

Source: OECD and FAO Secretariats.

potentially come from conventional biofuels such as maize starch based ethanol and therefore only needs to meet the 20% GHG reduction criteria. It is worth noting here that there is no explicit mandate for maize based (specifically maize starch) ethanol in the system, only that it may compete with both other conventional biofuels³ and advanced biofuels which may be consumed in excess of its mandate, in filling the conventional gap (C).

The mandates only restrict minimum quantities and are nested within each other, creating a hierarchy of biofuel types. Any overproduction in a sub-category can be used to fulfill the next broader mandate. Under varying conditions all, some or none of the four mandates may be binding at any given time.

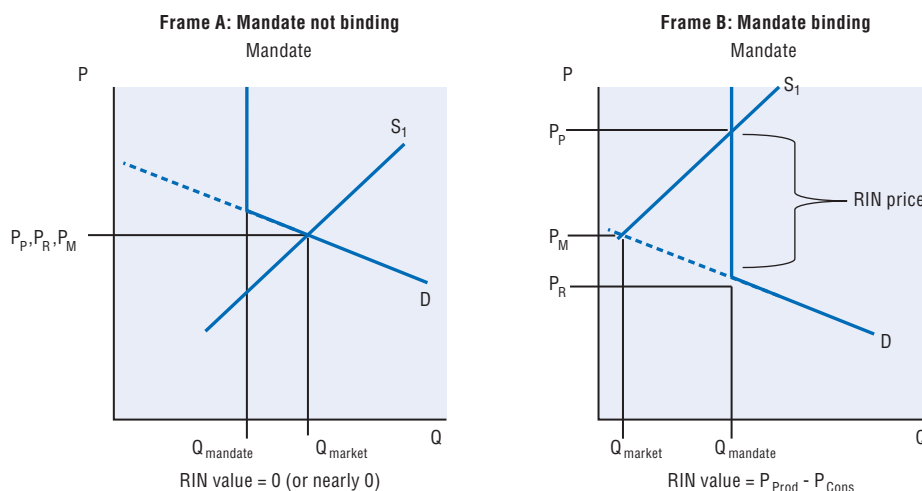
RIN markets and prices

Blenders are the obligated party in the system of mandates and show compliance in all four mandate categories, total, advanced, bio-based diesel and cellulosic biofuels, through the submission of Renewable Identification Numbers (RINs). A RIN is a 38-digit number which indicates the year, volume and highest mandate classification the renewable fuel is capable of meeting and is obtained from the US Environmental Protection Agency (EPA) by the biofuel producer upon production and registration of the fuel. Conveyed along with the fuel, for example maize starch based ethanol, is the associated RIN (in this case a conventional RIN) where the blender can detach and use the RIN for compliance or sell the RIN to another blender to help satisfy their obligation. The RIN price may be very low if the market demands quantities in excess of the mandate, such as when oil prices are high relative to biofuel prices, or the RIN may be very costly if the mandate quantity is well in excess of true market demand.

When the market (P_M) demands more than the mandated quantity (frame A in Figure 3.A1.2) the price paid for the renewable fuel from producer (P_P), blended and sold into the retail supply chain (P_R) will be equivalent when adjusted for taxes and margins. However, when the mandate is in excess of that the market would otherwise demand the wholesale price of the renewable fuel will rise relative to its value to consumers (frame B). In this context, blenders must pay a price to producers high enough to obtain the quantities they need to meet the mandate (P_P). The blenders cannot impose the cost directly on the ethanol share of the retail fuel or risk reducing demand for renewable, making the mandate even harder to achieve. They therefore must sell it at a lower price (P_R)

based on consumers preferences. Blenders must spread the cost of RINs out over the entire motor fuel sales, both petrol and distillates, maintaining relative renewable and conventional fuel prices; which in turn raises costs to motor fuel consumers. This difference between what the blenders pay (P_P) and what they impose on the retail market (P_R) is reflected in the RIN price. With four separate mandates there are potentially four separate RIN prices each of which reflects the per gallon cost born by motor fuel consumers of imposition of that mandate.

Figure 3.A1.2. **Determination of a binding mandate and RIN price evaluation**



Source: OECD and FAO Secretariats.

The hierarchical nature of the mandates will be reflected in the RIN prices. A biodiesel RIN can be priced no lower than an advanced RIN as any lower priced biodiesel RINs would be diverted to satisfy the advanced mandate equalising prices. If the biodiesel mandate is highly binding, biodiesel RIN prices would rise, but advanced RINs which, conversely, cannot be used for biodiesel compliance may lag behind.

Examples illustrating the nested nature of the biofuels mandates

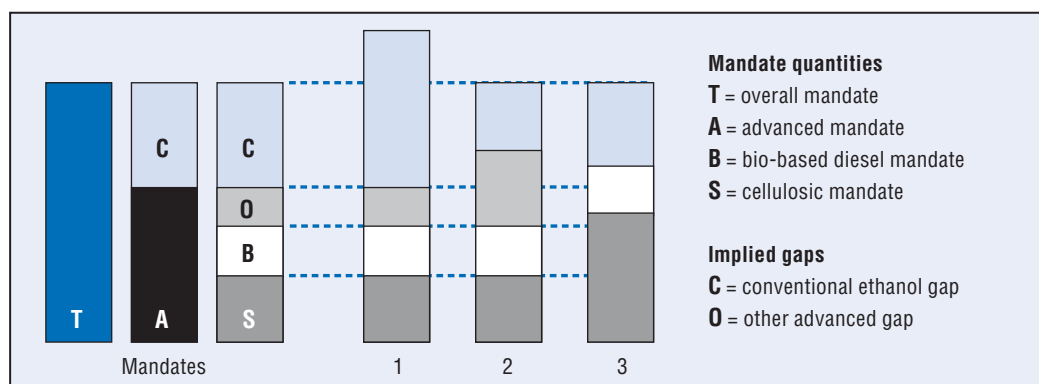
A number of examples not intended to be exhaustive, can highlight some of the possible outcomes and clarify the hierarchical nature of the mandates (Figure 3.A1.3).

Market outcome 1 shows the situation where, perhaps due to high petroleum prices and low agricultural commodity prices, maize ethanol consumption exceeds the conventional mandate gap (C) and therefore total ethanol RIN supplies exceed the total mandate. The total mandate would then be non-binding, conventional RIN prices would approach zero.

Market outcome 2 highlights the point that no specific mandate for conventional ethanol exists within EISA, but only a conventional biofuel gap. This case may be reflected in a situation where the total biofuel mandate may be binding, but imports of sugarcane ethanol, perhaps from high maize prices as a result of a short-crop, could enter and displace maize starch based ethanol in meeting the total mandate. In this instance the total mandate may be binding while the advance mandate is not and conventional and advanced RIN prices will be close in value.

Finally, market outcome 3 further highlights the hypothetical situation where there is a technological breakthrough in cellulosic ethanol production which reduces the cost of production, while the overall mandate remains binding, perhaps in the context of a low petroleum price. In this instance, cellulosic production may far exceed its mandate, but it cannot displace bio-based diesel production which has its own category specific mandate. Together, biodiesel and cellulosic ethanol may provide sufficient quantities to meet and exceed the advanced biofuel mandate and even displace some of the corn starch based ethanol being used to meet the total mandate. The biodiesel mandate and the total mandate may be binding but the cellulosic and advanced mandates would not be. In this situation, the prices for cellulosic and conventional RINs would be very close.

Figure 3.A1.3. **Nesting of mandates, examples of different market outcomes**



Source: OECD and FAO Secretariats.

Mandate flexibilities

Additional flexibility and complexity is added to the mandate system with provisions allowing blenders to “rollover” or run a “deficit” of RINs into the following year. Up to 20% of a given mandate may be met with RINs produced in the previous year. This allows for limited “stock holding” of obligations which can be drawn down in years where RIN prices rise. The blender can hold an additional stock of RINs as a hedge against rising biofuel and RIN costs or other compliance issues. This allows for some moderation of feedstock prices when a transient shock, such as below average crop yields, push RIN prices higher.

On an individual basis, blenders may fall short of the mandate in a particular year if in the following year they make up the “deficit” from the previous year and fully comply with the mandate in the current year. Running a deficit in the current year introduces considerable rigidity in the following year for blenders, as failure to comply with mandates can result in a fine of USD 37 500 per day plus any economic benefit derived from non-compliance.⁴ Such flexibility in the mandate should mitigate swings in feedstock and biofuel prices from transient shocks in energy prices and crop production.

Mandate waivers and the implication of EPA implementation

The OECD-FAO baseline maintains current US biofuel policy with respect to mandates;⁵ however, implementation of the policy by the Environmental Protection Agency (EPA) remains a significant source of uncertainty and could have significant effects on commodity markets.

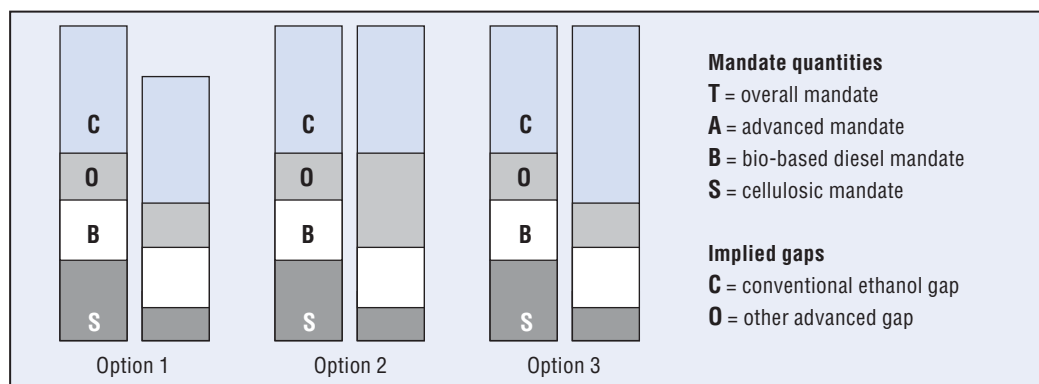
Each year, the EPA puts forth the minimum quantities for each of the four classes of biofuels required (total, advanced, bio-based diesel and cellulosic biofuels), taking into account what can be viably produced or imported. Thus far, the production capacity for cellulosic ethanol has lagged well behind the quantities mandated in 2010, 2011 and 2012. For 2012 the EISA legislation calls for 500 Mn gallons (1.893 Bnl), but has been reduced by the EPA to just 8.65 Mn gallons (32.7 Mnl) or just 1.7% of the targeted quantity. The cellulosic mandate also grows at an increasing rate for the remainder of the projection period. While this shortfall has its own implications for biofuel markets in terms of potential feedstock use and production, there is concern that meeting the cellulosic mandate faces considerable hurdles.^{6, 7}

This leaves the EPA with an important decision each year regarding the other mandates. It is within their power to adjust each of the other mandate levels or leave them as legislated in EISA. The EPA may choose Option 1 in Figure 3.A1.4, in this case they lower the total and advanced mandate by the shortfall in cellulosic ethanol which keeps the conventional ethanol gap and other advanced fuel gap consistent with EISA. This policy maintains the maximum quantity of maize based ethanol that can be used to meet the mandate as well as the need for advanced fuels to meet the “other advanced gap”. This choice is likely to lead to the lowest commodity and food prices while also resulting in the lowest GHG savings.

Alternatively the EPA could choose Option 2 in Figure 3.A1.4 and maintain both the advanced and total mandate which results in the widening of the other advanced gap and potentially drawing in additional imports such as sugarcane ethanol from Brazil. This option is likely to have a larger impact on commodity and food prices and mandate compliance costs than Option 1.

The EPA could alternatively choose to keep the other advanced gap fixed by reducing the advanced mandate by the same amount as the shortfall in cellulosic fuels while maintaining the total mandate. This would result in a growth in the conventional ethanol gap and a larger potential market for maize ethanol (Option 3 in Figure 3.A1.4). The EPA could also choose to do a partial adjustment on either the advanced mandate or total mandate or any combination of the two.

Figure 3.A1.4. **EPA mandate implementation options**



Source: OECD and FAO Secretariats.

Thus far, with the cellulosic mandate at relatively low levels, the EPA has chosen to keep the total and advanced mandate at their original levels (i.e. Option 2 in Figure 3.A1.4). This has led to the opening up of the “other advanced gap” of undefined advanced fuels needed to meet the mandate, such as imports of sugarcane ethanol from Brazil, a gap which will grow rapidly in the future if EPA maintains this option (Table 3.1).

Under legislated quantities, in 2020 the advanced gap would require 2.58 Bn gallons (9.76 Bnl) of other advanced fuel. Under our projected cellulosic biofuel production path, the continuation of current EPA implementation would result in the need for 10.731 Bn gallons (40.624 Bnl) of other advanced fuels in 2020. In developing the baseline for the OECD-FAO *Agricultural Outlook 2012-2021*, this was deemed an unlikely outcome; the most viable fuels to fill this gap, under current projections, would appear to be significant additional imports of sugarcane ethanol with possible additional production of biodiesel beyond its mandated minimum. This volume of imports would represent more than the total ethanol production for Brazil in 2011.

In the OECD-FAO *Outlook 2012-2021*, it was therefore decided to reduce both the total and advanced mandate by a proportion of the shortfall in cellulosic biofuels such that the other advanced gap did not shrink from year to year and the conventional ethanol gap was held to the quantities in the legislation. Changes in this assumption would have significant impact on commodity prices and consumer fuel costs as well as biofuel prices and trade. The production of cellulosic biofuels is an exogenous component in the model; all other categories of biofuels as defined in the nested structure of mandates are modeled endogenously.

The blend wall and constraints on biofuel demand

While the system of mandates in US policy specify quantities of biofuels which must be domestically consumed it provides no direction on *how* such fuels should be consumed. Petrol dominates US fuel consumption, representing 62% of consumption, with diesel fuels representing another 28%.⁸ Short run technical constraints, referred to as “the blend wall” in the petrol market, act as an impediment to increased ethanol consumption. Biodiesel use could face similar constraints in the future.

Prior to 2011, conventional petrol vehicles in the United States were limited, by EPA rules, to a maximum blend of 10% ethanol by volume with a small number of flex fuel vehicles (FFV) able to take up to 85% blends.⁹ The 10% constraint posed little problem when motor fuel use was near 568 Bnl annually and ethanol production well below the constraint of 57 Bnl. With rising quantitative mandates and stagnating aggregate motor fuel use as a result of the financial crisis and of higher mileage vehicles, the United States quickly was approaching saturation of the conventional vehicle market.¹⁰ In 2011 the EPA announced that vehicles produced in 2001 or later would be allowed to use blends up to 15% ethanol¹¹ and preliminary rules and consumer guidelines were released in early 2012.¹² Data from a similar 11 year period from 1998 to 2009 showed the newer vehicles represented 70% of household automobile ownership but these vehicles represented over 77% of the miles driven.¹³

While this increases substantially the size of the ethanol market in conventional vehicles, many obstacles remain along the distribution chain. These constraints can have significant impact on the costs to consumers of the mandate system and the competition between renewable fuels, primarily ethanol and biodiesel, to fill the undefined advanced

fuel quantities (O) within the EISA mandate. While EPA rules allow the dispensing of E15, retailers may be hesitant to offer it to consumers until the issue of liability is resolved. Earlier car warranties may limit ethanol content to the previous 10% limit and would expose retailers to other consumer complaints. In addition, with a bifurcated market of newer and older vehicles, retailers must take action to minimise the mis-fuelling of vehicles by consumers who may be unaware of the restrictions. There may also simply be no “room” at the pump to add yet another handle dispensing an additional fuel type (different octane and ethanol inclusion rate combinations). Furthermore, the installation of additional underground tanks is very costly.

While even modest growth in E15 dispensing would allow for full absorption of maize ethanol that could be used to fulfill the conventional ethanol mandate gap (C), any significant growth in cellulosic ethanol production¹⁴ or imports of sugarcane ethanol to meet the advanced mandate gap (O) could put pressure on the distribution system. This pressure will be reflected in increased RIN prices, ultimately born by consumers, and increase the incentives for blenders to expand the availability of E15 and E85 fuels and to price them competitively. This pressure also increases the motor fuel costs to consumers who may consume less in aggregate and thus make the ethanol blend-wall even more constraining. As an alternative, the constraint of the blend-wall also increases the potential for biodiesel consumption to exceed its own mandate to fulfill the larger advanced mandate if consumption of renewable diesel is less constrained.

It is assumed in baseline projections that the blend wall is gradually extended from 10% to 15% over the projection period and that the assumed effective blend wall would be reached by 2016.

Further reading

The discussion of US biofuel policy and its implementation are drawn from the following works where additional detail may be found.

Meyer, Seth and Wyatt Thompson. “EPA Mandate Waivers Create New Uncertainties in Biodiesel Markets”, *Choices*, Vol. 26 (2), 2011.

Thompson, Wyatt, Seth Meyer and Patrick Westhoff. “Renewable Identification Numbers are the tracking Instrument and Bellwether of US Biofuel Mandates”, *EuroChoices*, Vol. 8 (3), pp 43-50, 2009.

Notes

1. The vast majority of cars in the US have gasoline engines while the trucking fleet is dominated by diesel engine trucks.
2. Energy Independence and Security Act of 2007, Public Law 110–140 (2007) www.gpo.gov/fdsys/pkg/PLAW-110publ140/pdf/PLAW-110publ140.pdf.
3. Ethanol derived from corn starch is explicitly named as a conventional biofuel but it is not the only conventional biofuel. Other grains could be used to produce ethanol and if a 50% GHG reduction is not achieved the derived ethanol would be considered as a conventional biofuel.
4. EPA claims this authority under sections 205 and 211 of the Clean Air Act www.epa.gov/air/caa/title2.html.
5. Including the assumption that the cellulosic mandate will continue to be set by EPA at a reduced volume relative to that legislated in EISA.
6. www.fas.org/sfp/crs/misc/R41106.pdf.

7. The *Outlook* baseline for cellulosic biofuel production in the United States is exogenous and dependent on a fixed technology path.
8. Jet fuel consumption represents the remaining 10%, www.eia.gov/forecasts/steo/report/us_oil.cfm.
9. In October of 2010, the EPA granted a partial waiver for the use of E15 in model year 2007 and newer vehicles.
10. The mandates are quantitative and do not respond to aggregate motor fuel use. Factors which increase or decrease aggregate motor fuel use, change the effective share of biofuels required in consumption.
11. <http://edocket.access.gpo.gov/2011/2011-1646.htm>.
12. www.gpo.gov/fdsys/pkg/FR-2011-07-25/pdf/2011-16459.pdf.
13. National Travel Household Survey (<http://nhts.ornl.gov/download.shtml>) Author's query from data set using NTHS estimates of miles driven by age, self reported miles driven would increase the share of newer vehicle miles to over 81%. The results do not correct for potential differences in miles per gallon based on age of vehicle.
14. Cellulosic biodiesel also qualifies as a cellulosic fuel.

ANNEX 3.A2

Uncertainties around the implementation options of US biofuel policies: Results of the scenarios

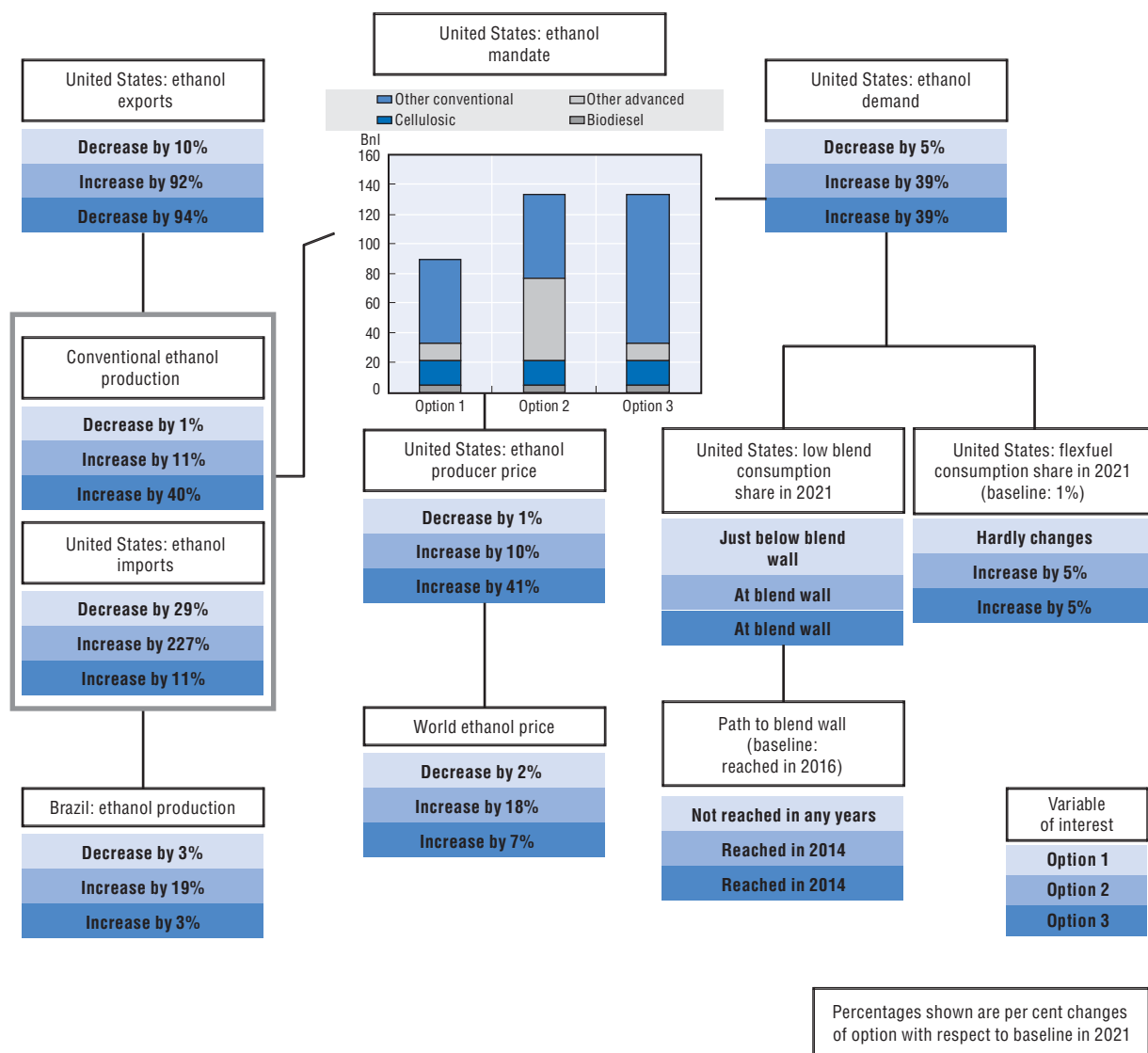
Table 3.A2.1. Results of the three options scenarios

		Baseline		Option 1	Option 2	Option 3
		Average 2009-2011	2021	2021	2021	2021
Ethanol production						
USA	MN L	47 617	82 610	81 860	89 553	108 960
Brazil	MN L	25 331	51 300	49 625	61 048	52 627
European Union	MN L	6 424	15 748	15 572	17 145	15 986
Canada	MN L	1 565	1 992	1 978	2 135	2 550
China	MN L	8 094	10 058	10 016	10 507	10 146
India	MN L	1 976	4 194	4 174	4 376	4 237
Rest of World	MN L	7 213	14 673	14 598	15 337	14 776
Ethanol use						
USA	MN L	45 582	90 757	86 217	126 462	125 778
Brazil	MN L	23 347	39 805	41 287	25 902	34 467
European Union	MN L	7 877	19 388	19 388	19 388	19 388
Canada	MN L	1 759	2 356	2 356	2 356	2 356
China	MN L	7 994	10 242	10 433	8 905	9 646
India	MN L	2 254	4 384	4 385	4 381	4 383
Rest of World	MN L	8 406	13 460	13 573	12 524	13 076
Energy share in Gasoline type fuels						
USA	%	5.4	10.9	10.4	15.3	15.2
Brazil	%	47.1	64.3	66.8	40.4	55.1
European Union	%	2.7	8.3	8.3	8.3	8.3
Canada	%	2.6	3.4	3.4	3.4	3.4
China	%	1.8	1.3	1.4	0.7	1.0
Ethanol trade						
USA	MN L	1 864	-8 268	-4 479	-37 030	-16 943
Brazil	MN L	1 984	11 495	8 338	35 146	18 160
European Union	MN L	-1 453	-3 640	-3 816	-2 243	-3 402
Canada	MN L	-195	-364	-378	-221	194
China	MN L	100	-183	-416	1 602	500
India	MN L	-278	-190	-211	-5	-146
Rest of World	MN L	-1 205	1 214	1 025	2 813	1 700
Biodiesel						
USA production	MN L	2 834	5 083	5 083	7 571	8 006
USA consumption	MN L	2 546	4 979	4 979	7 515	7 956
USA net trade	MN L	288	104	104	56	50
Prices						
World						
Ethanol	USD/hl	64	96	94	113	102
Biodiesel	USD/hl	132	181	181	184	185
Coarse grains	USD/t	228	246	245	259	286
Raw sugar	USD/t	533	483	482	516	503
Wheat	USD/t	267	279	279	286	294
Oilseeds	USD/t	503	550	549	562	572
Vegetable oils	USD/t	1 067	1 232	1 232	1 256	1 265
Beef and veal (USA)	USD/t	3 477	4 718	4 711	4 780	4 900
Pigmeat (USA)	USD/t	1 658	2 380	2 375	2 434	2 542
Poultry (USA)	USD/t	1 074	1 121	1 119	1 148	1 204
Fish	USD/t	2 500	3 445	3 441	3 484	3 532
USA						
Ethanol	USD/hl	61	77	76	85	108

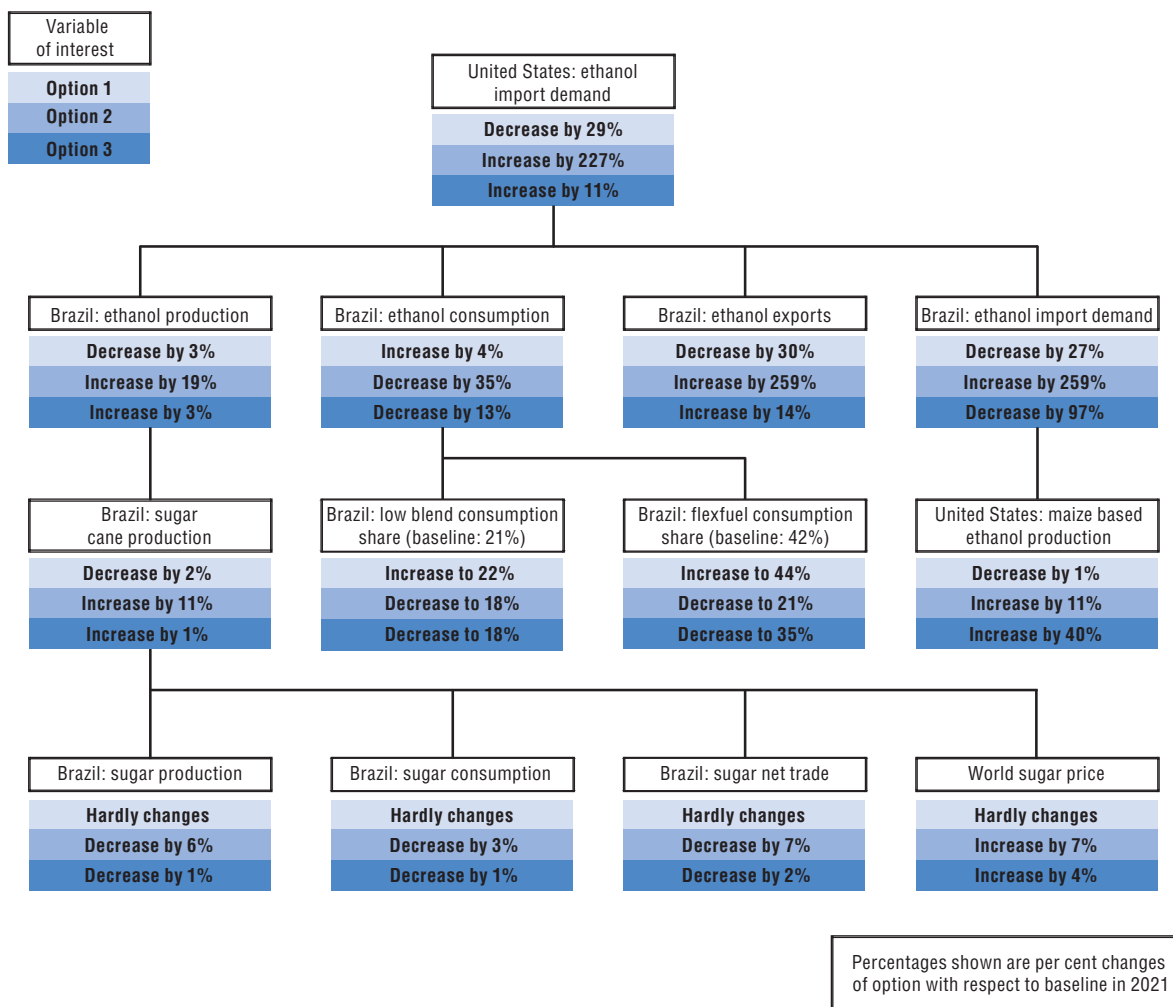
Note: For the definition of world prices, please refer to footnotes of Table 1.A.2. 30 and 31.

Source: OECD and FAO Secretariats.

Figure 3.A2.1. Implications of the three options on the US ethanol market

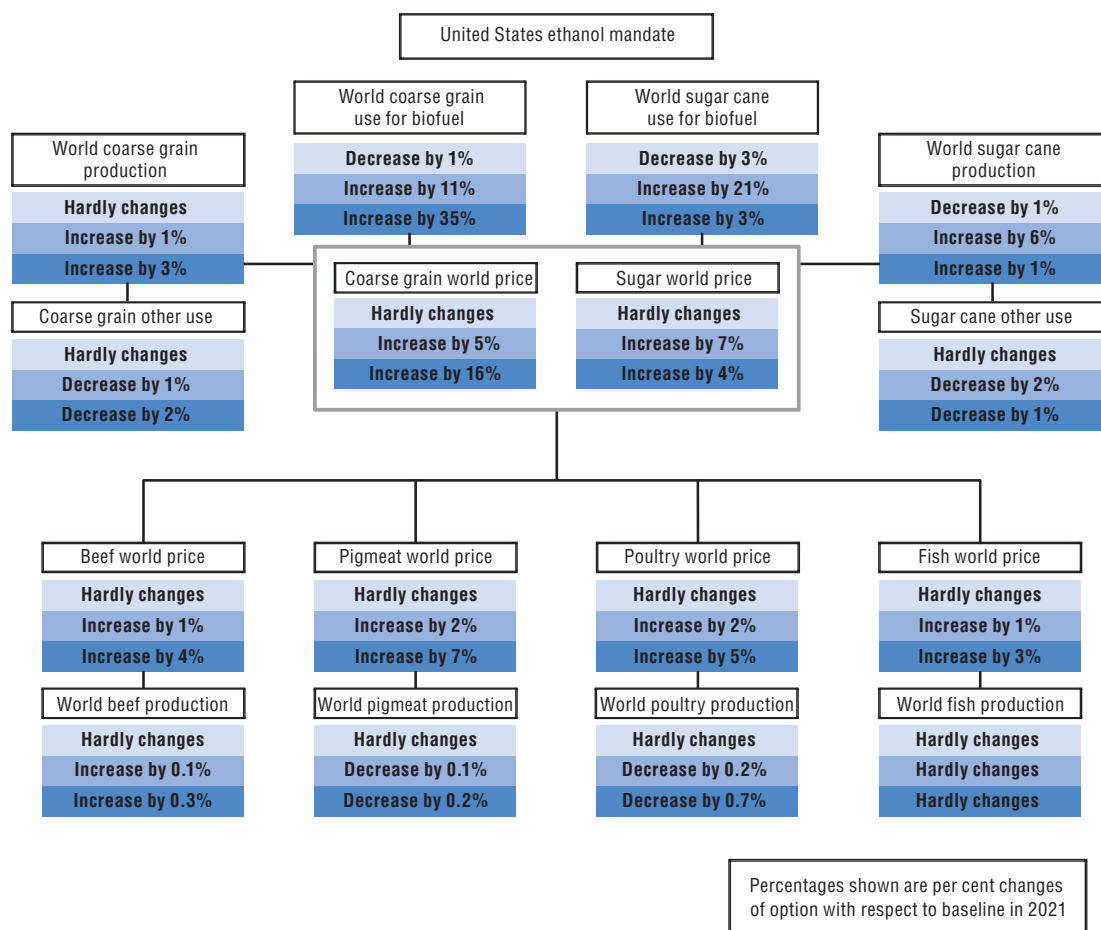


Source: OECD and FAO Secretariats.

Figure 3.A2.2. **Interactions between US and Brazilian ethanol markets**

Source: OECD-FAO Secretariats.

Figure 3.A2.3. Impacts on the other agricultural sectors



Source: OECD and FAO Secretariats.



April 5, 2013

Honorable Fred Upton
Chairman
Honorable Henry Waxman
Ranking Member
House Committee on Energy and Commerce
RFS@Mail.House.Gov

Dear Sirs,

Thank you for organizing this important and timely review of the Renewable Fuel Standard (RFS). We are pleased to comment on two questions posed in your March 20, 2013 White Paper on Blend Wall Challenges.

Sincerely,

Marlo Lewis, Senior Fellow
Anthony Ward, Research Associate

As enumerated in the White Paper, those questions are:

- 1. To what extent was the blend wall anticipated in the debate over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?*
- 6. Could the blend wall be delayed or prevented with increased use of E-85 in flexible fuel vehicles? What are the impediments to increased E-85 use? Are there policies that can overcome these impediments?*

Comment on Question 1

Based on preliminary research, we find that RFS proponents anticipated the blend wall in the debate on the Energy Independence and Security Act. This finding is not surprising. They wanted to displace as much oil consumption as possible with ethanol, and it is self-evident that an E10 blend wall limits ethanol's share of the U.S. motor fuel supply to about 10%.

Typically, these advocates viewed the RFS as just one component of a more comprehensive plan combining production quota for ethanol with production quota for flex-fuel vehicles and incentives to install infrastructure capable of handling high-ethanol blends. Examples follow.

Next Generation of Biofuels: Cellulosic Ethanol and the 2007 Farm Bill, Hearing before the Subcommittee on Energy Science and Technology, of the Committee on Agriculture, Nutrition and Forestry, U.S. Senate, April 4, 2007, Statement of Reid Jensen, President, South Dakota Corn Growers, p. 13, <http://www.gpo.gov/fdsys/pkg/CHRG-110shrg37885/pdf/CHRG-110shrg37885.pdf>:

Currently, 85 percent of the ethanol is shipped via rail, and the remaining 15 percent relies on trucks and barges. As we increase ethanol capacity over the next 10 to 20 years, we will need greater railroad capacity, access, and expansion in order to meet the needs of a booming biofuels industry. Combine rail and road constraints with the need for more pumps and more cars, ethanol could hit a wall. Without these infrastructure improvements and addressing head-on these obstacles, ethanol will hit a saturation point, a blend wall near 15 billion gallons. At 15 billion gallons, yes, we will be blending 10 percent of all gasoline; however, we cannot pass this law without investment in renewable fuel infrastructure as well as getting more pumps at the station, more flex-fuel vehicles on the road, and higher blends to the market, like E20. We appreciate greatly Senator Thune's efforts to get E20 online and his work with the EPA on this matter. In the end, these limitations could stunt any progress on key issues that need to be looked at as we push forward our domestic energy security agenda.

Farm Bill Policy Proposals Relating to Farm and Rural Energy Issues and Rural Development, Hearing before the Committee on Agriculture, Nutrition, and Forestry, U.S. Senate, May 9, 2007, Response of Robert Grabarski, National Council of Farmer Cooperatives, to Sen. John Thune, p. 23, <http://www.gpo.gov/fdsys/pkg/CHRG-110shrg35054/pdf/CHRG-110shrg35054.pdf>:

Sen. THUNE: But in terms of the overall big picture policy, increasing the RFS, going from E10 to E20, which of those things makes the most sense in terms of this Committee or the Energy Committee or other committees that are going to be dealing with this issue? I am a big believer that we need to go from E10 to E20. The car manufacturers are pushing back against that. And if we increase the RFS beyond 2012, what should we increase it to?

Mr. GRABARSKI. If there is a priority, I would guess that it would be to increase it from E10 to the next level. That may not be E20. It may be E15; it may be E20. I do not know.

Sen. Charles Grassley, *Congressional Record*, May 23, 2007, S. 6539,
<http://www.gpo.gov/fdsys/pkg/CREC-2007-05-23/pdf/CREC-2007-05-23-pt1-PgS6539-2.pdf#page=1>:

Ethanol's contribution is a significant net increase to our Nation's fuel supply. But as the industry grows, it is imperative that higher ethanol blends be available to consumers. When I say higher ethanol blends, I mean beyond the 10 percent mixture that we have right now. We even have cars right now that can burn up to 85 percent ethanol. That is why we refer to it as E85. That is what we are talking about, increasing the 10 percent as cars are manufactured, to be able to consume it without hurting the engine. That is where the automobile companies are headed. That is where the ethanol industry is headed to back it up. But the point I will make in a minute is that the distribution for E85 is a problem, and it looks to me like big oil is a major part of that problem. That is what I am going to point out.

We are quickly approaching a time when ethanol will be produced in a quantity greater than that needed for the blend market as we continue down the road that has been pioneered by Brazil--and that is the best example—to use cars that will, in fact, burn 100 percent ethanol. For sure, we must continue on this path of reducing foreign oil dependence and greater renewable fuel use. To do that, then, it is critical that we develop the infrastructure and the demand for E85, an alternative fuel comprised of 85 percent ethanol, 15 percent gasoline.

Sen. Byron Dorgan, *Congressional Record*, October 16, 2007, S12892,
<http://www.gpo.gov/fdsys/pkg/CREC-2007-10-16/pdf/CREC-2007-10-16-pt1-PgS12891.pdf#page=1>

We use about 140 billion gallons or 145 billion gallons of fuel a year. If every single gallon of fuel were blended with ethanol, our total market for ethanol would be about 14.5 billion gallons. The President says let's go to 35 billion gallons. I agree with that. So do most of my colleagues. The Senate has already voted on a bill to produce 36 billion gallons. But how are we going to use 36 billion gallons if we are only blending ethanol at 10 percent? We have to have the E85 pumps. They are producing flex-fuel vehicles in Detroit now, and they have said they are going to get to 50 percent of all the vehicles they produce being flex-fuel vehicles so we can run a fuel that is 85 percent ethanol. E85 they call it.

We are going to need to pump E85 percent ethanol. We are going to need to have blend pumps that blend 30 percent, 40 percent, and 50 percent blends of ethanol and

gasoline. We have to do all these things if this country is determined to move in a direction that makes us less dependent on foreign oil.

We have to make things happen. An infrastructure bill that says if we are going to produce biofuels—and we are, and if we are going to aspire to get 36 billion gallons of biofuels—and we should, then you have to have a plan by which you market that. If you produce it and don't market it, the market for that particular energy collapses, and it will set us back decades.

Energy Market Effects on Recently Passed RFS, Hearing before the Committee on Energy and Natural Resources, U.S. Senate, February 7, 2008, Response of Robert J. Meyer, Principal Deputy Administrator, Office of Air and Radiation, EPA, to Questions from Sen. John Barrasso, pp. 70-71, <http://www.gpo.gov/fdsys/pkg/CHRG-110shrg42123/pdf/CHRG-110shrg42123.pdf>

Question 2. Some individuals speculate that the ethanol industry is facing a de facto “blend wall” due to the practical limit of a ten percent blend, which some experts estimate to be in the range of 11 to 12 billion gallons. I understand these claims are made in part due to a combination of small engine warranty concerns for ethanol blends above ten percent, and statewide air quality caps, such as those imposed in California. What is EPA’s opinion of these potential practical barriers, in terms of increasing and assimilating future ethanol production?

Answer. EPA is aware of the concerns about a practical limit on the total volume of E10 that can be used in the market. EPA is also aware of the potential barriers to widespread distribution of E85 and use of mid-level ethanol blends (ethanol-gasoline blends with greater than 10 percent ethanol content). EPA’s primary concern rests with the effect such mid-level blends may have on the emissions and components of gasoline-powered vehicles and engines. Although modern vehicles and engines are designed to operate on E10, concerns exist that levels of ethanol over 10 percent in non-flex-fuel vehicles and engines might result in durability and performance problems and increases in emissions. There are also specific concerns regarding the use of such blends in small engines, such as those used in lawn and garden equipment, which typically are less able to adjust properly to changes in fuel composition.

Alexander Karsner, Assistant Secretary, Office of Energy Efficiency and Renewable Energy, DOE, gave a similar answer to Sen. Barrasso’s question (p. 83):

Answer. Today the vast majority of the nation’s ethanol is marketed for use in vehicles and engines as a blend up to 10 percent (E10) in gasoline. The only other way of using ethanol is in the form of E85 in specially designed flexible fuel vehicles. However, less than one percent of all ethanol used in U.S. transportation fuel comes in the form of E85. Given the new renewable fuel standard requirements for significant increases in

biofuels as well as increased domestic production of ethanol, the E10 market is becoming saturated and may in fact reach the “blend wall” in the next 24 to 36 months—the equivalent of 10 percent of all gasoline sold. There are two paths to increase ethanol markets beyond the 12 to 14 billion gallons (which the “wall” represents), which are being pursued in parallel: Expand E85 markets at a significantly accelerated pace, including maximizing flexible fuel capability across the vehicle fleet amongst all manufacturers that serve the US market as well as E85 fueling stations; and certify intermediate gasoline blends to use up to 15 or 20 percent ethanol (i.e., E15, E20), letting market forces drive ethanol supply distribution (based on successful engine/emissions testing and EPA approval).

Comment on Question 6

Increased blending of E85 is not a viable strategy to remove, or delay hitting, the blend wall. Under the RFS, refiners earn RIN credits only for gallons of ethanol sold. There is very little consumer demand for E85, and for good reason – mile per mile, it is more costly than gasoline.

A gallon of ethanol is cheaper than a gallon of gasoline.¹ However, ethanol has about one-third less energy than gasoline² and does not make up the difference in price. Consequently, the higher the ethanol blend, the worse mileage your car gets, and the more money you spend to drive a given distance.

FuelEconomy.Gov, a Web site jointly administered by the U.S. Environmental Protection Agency (EPA) and the Department of Energy (DOE), calculates how much a typical motorist would spend in a year to fill up a flex-fuel vehicle with either E85 or regular gasoline.³ The exact bottom line changes as gasoline and ethanol prices change. The big picture, though, is always the same: *Ethanol is a net money loser for the consumer.*

At today’s prices, it costs an extra \$400-\$650 a year to switch from regular gasoline to E85 (see images below). This price differential, which hit \$750-\$900 in February, is the principal barrier to market penetration of E85 and other high ethanol blends. Even if everybody owned a flex-fuel vehicle, and every service station installed E85 blender pumps, few willing customers would buy the fuel. Lower energy content and inferior fuel economy also explains why the “choice” to buy ethanol must be mandated.

¹ Government of Nebraska, Ethanol and Unleaded Gasoline Rack Prices, <http://www.neo.ne.gov/statshtml/66.html>


² California Energy Commission, Ethanol as a Transportation Fuel, <http://www.consumerenergycenter.org/transportation/afvs/ethanol.html>

³

<http://www.fueleconomy.gov/feg/PowerSearch.do?action=alts&year1=2012&year2=2013&vfuel=E85&srctype=ne wAfv>

☐

Compare



Gas	28 City	33 Combined	40 Highway	23.5 Show Details	\$1,650 per year
E85	20 City	23 Combined	28 Highway		\$2,050 per year
				Safety Ratings	

☐

Compare

© Ford Motor Company



Gas	28 City	33 Combined	40 Highway	Not Available	\$1,650 per year
E85	20 City	23 Combined	28 Highway		\$2,050 per year
MSRP: \$16,200 - \$24,200				Safety Ratings	

2012 Ford Focus SFE FWD FFV 2.0 L, 4 cyl, Auto(AM6), Regular Gasoline or E85

Compare



Gas	28 City	33 Combined	40 Highway	23.5 Show Details	\$1,650 per year
E85	20 City	23 Combined	28 Highway		\$2,050 per year
				Safety Ratings	

☐

Compare

© Ford Motor Company



Gas	28 City	33 Combined	40 Highway	Not Available	\$1,650 per year
E85	20 City	23 Combined	28 Highway		\$2,050 per year
MSRP: \$16,200 - \$24,200				Safety Ratings	

2013 Ford Focus SFE FWD FFV 2.0 L, 4 cyl, Auto(AM6), Regular Gasoline or E85

☐

Compare



© GM Corp.

Gas

17

City

20

Combined

24

Highway

Not Available

\$2,750

per year

E85

12

City

14

Combined

18

Highway

\$3,400

per year

MSRP: \$23,530 - \$29,220

[Safety Ratings](#)

☐

Compare



© GM Corp.

Gas

17

City

20

Combined

24

Highway

Not Available

\$2,750

per year

E85

12

City

14

Combined

18

Highway

\$3,400

per year

MSRP: \$25,560 - \$31,260

[Safety Ratings](#)

April 5, 2013

The Honorable Fred Upton
Chairman
House Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515

The Honorable Henry Waxman
Ranking Member
House Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

On March 20, 2013, the House Committee on Energy and Commerce announced a series of white papers exploring a number of emerging issues with the Renewable Fuel Standards. This announcement posed a series of questions and solicited input from interested stakeholders. The undersigned organizations are responding to the eighth question, which asks "Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?"

The undersigned organizations strongly oppose liability relief for harm caused by transportation fuels and fuel additives such as such as methyl tertiarybutyl ether (MTBE) and 15 percent ethanol (E15) blend. We oppose providing liability protections to makers of defective fuel products, or shielding owners and operators of leaking underground storage tanks from legal action.

Liability relief would endanger public health and consumer safety, as well as pass associated risks onto consumers, who would be left exposed to billions of dollars in potential damages with no means of recourse. Twenty-seven states have banned MTBE, a gasoline additive notorious for leaking from underground storage tanks. Its handlers should not benefit from liability protection. Ethanol producers and distributors also should not be exempt from liability for E15, a fuel which has been found to cause engine failure in boats, non-road vehicles and equipment, void auto warranties and contribute to lower gas mileage.

As the Committee initiates its series of white papers we ask that you consider these concerns. Thank you for your time and attention. If you have any questions, please do not hesitate to contact Joanne Doroshow at the Center for Justice & Democracy, joanned@centerjd.org.

Very sincerely,

Alliance for Justice
Center for Auto Safety
Center for Justice & Democracy at New York Law School
National Consumers League
Public Citizen
U.S. PIRG



April 10, 2013

Freeze It—A Proposal for Implementing RFS2 through 2015

Permalink URL <http://farmdocdaily.illinois.edu/2013/04/freeze-it-proposal-implementing-RFS2.html>

In our *farmdoc daily* post on [February 13](#) of this year, we traced through the implications of implementing RFS2 as currently quantified through 2015. We made the following qualifying assumptions in that analysis:

- Cellulosic mandates would continue to be written down to near zero in each year,
- Total mandated biofuels quantities would not be altered,
- Annual imports and exports of ethanol would be equal at 500 million gallons,
- A domestic ethanol blend wall of 12.9, 13.1 and 13.4 billion gallons in 2013, 2014, and 2015, respectively,
- The annual mandated minimum for biomass-based biodiesel would remain at 1.28 billion gallons,
- Ethanol (D6) RINs stocks totaled 2.6 billion gallons at the start of 2013, and
- Biodiesel (D4) RINs stocks totaled 330 million gallons (ethanol equivalent) at the beginning of 2013.
-

That analysis resulted in the following conclusions:

- Annual U.S. ethanol production would equal the blend wall amounts of 12.9, 13.1, and 13.4 billion gallons in 2013, 2014, and 2015, respectively,
- Annual corn consumption for ethanol production would be 4.61, 4.68, and 4.79 billion bushels in 2013, 2014, and 2015, respectively,
- Biomass-based biodiesel production would increase from 1.28 billion gallons in 2013, to 2.57 billion gallons in 2014, and 4.73 billion gallons in 2015,
- Feedstock requirements for biomass-based biodiesel production would increase from 9.6 billion pounds in 2013, to 19.3 billion pounds in 2014, and 35.5 billion pounds in 2015,
- Ethanol RINs stocks would be depleted sometime in 2014, and
- Biodiesel RINs stocks would be depleted in 2013.

We found these outcomes problematic for two reasons. First, the capacity to produce the required level of biomass-based biodiesel beyond 2014 does not currently exist. Second, the feedstock requirements for biomass-based biodiesel production in 2014 and 2015 would overwhelm those markets. These issues stem primarily from the assumed very slow expansion in the size of the domestic ethanol blend wall. Ethanol consumption is being limited by a lack of growth in domestic motor fuel consumption and slow growth in the consumption of E15 and E85. The ethanol blend wall results in larger quantities of advanced biofuels to meet the total RFS. These blend wall constraints have now been expressed in the form of [rapidly increasing D6 RINs](#) prices since the first of the year. These issues become even more problematic beyond 2015.

Here, we present a proposal for implementing the RFS2 through 2015 that recognizes the constraints implied by the E10 blend wall and will avert the impact of the issues identified in the previous analysis. We believe the proposal is realistic because it balances the competing interests of various parties in the policy process and allows some additional time for regulators, legislators, and industry participants to consider any adjustments to RFS2 that might be needed in the longer-run. Our proposal is to simply cap or “freeze” the advanced biofuels and total mandates for 2014 and 2015 at the 2013 level of 2.75 billion gallons for advanced biofuels and 16.55 billion gallons for all biofuels. The RFS2 currently requires 3.75 billion gallons of advanced biofuels in 2014 and 5.5 billion gallons in 2015. The mandates are for 18.15 billion gallons of all biofuels in 2014 and 20.5 billion gallons in 2015.

Tables 1 through 7 are similar to the tables included in our previous analysis and trace through the implications of this proposal, with one change in the assumptions compared to our previous analysis. Due to the re-instatement of the biodiesel tax credit of \$1 per gallon (and assuming the tax credit is extended to 2014 and 2015), the analysis here assumes that imported Brazilian sugarcane ethanol will have an economic disadvantage to biomass-based biodiesel in meeting the undifferentiated advanced biofuels requirements. As a result, annual ethanol imports are assumed to be 200 million gallons rather than 500 million gallons assumed in the previous analysis.

Table 1. U.S. Renewable Fuels Standard for 2013-2015--Billion Gallons

Calendar Year	Total	Advanced				Renewable
		Cellulosic	Biodiesel(a)	Undifferentiated	Total	
2013	16.55	1.00	1.28	0.47	2.75	13.80
2014	18.15	1.75	*	2.00	3.75	14.40
2015	20.50	3.00	*	2.50	5.50	15.00

(a) each gallon of biodiesel receives 1.5 gallons credit towards RFS

* minimum of 1.0 billion gallons

Table 2. Implementation of U.S. Renewable Fuels Standard for 2013-2015 under a Freeze Proposal--Billion Gallons

Calendar Year	Total	Advanced				Renewable
		Cellulosic	Biodiesel(a)	Undifferentiated	Total	
2013	16.55	0.00	1.28	0.47	2.75	13.80
2014	16.55	0.00	1.28	0.47	2.75	13.80
2015	16.55	0.00	1.28	0.47	2.75	13.80

(a) each gallon of biodiesel receives 1.5 gallons credit towards RFS

* minimum of 1.0 billion gallons

Table 3. Writedown of U.S. Renewable Fuels Standard for 2013-2015 under a Freeze Proposal--Billion Gallons

Calendar Year	Total	Advanced				Renewable
		Cellulosic	Biodiesel(a)	Undifferentiated	Total	
2013	0.00	1.00	0.00	0.00	0.00	0.00
2014	1.60	1.75	0.00	1.53	1.00	0.60
2015	3.95	3.00	0.00	2.03	2.75	1.20

(a) each gallon of biodiesel receives 1.5 gallons credit towards RFS

* minimum of 1.0 billion gallons

Table 4. Advanced RFS for 2013-2015--Billion Gallons

Calendar Year	Total	Cellulosic	Biodiesel	Undifferentiated	Undifferentiated
				Biodiesel	Brazilian Ethanol
2013	2.75	0	1.28	0.00	0.20
2014	2.75	0	1.28	0.42	0.20
2015	2.75	0	1.28	0.42	0.20

Notes: Each gallon of biodiesel receives 1.5 gallons of credit toward meeting RFS mandates. Undifferentiated biodiesel in 2013 is assumed to be zero due to the use of 220 million gallons of D4 biodiesel RINS credits.

Table 5. U.S. Ethanol Balance Sheet and Implied Corn Consumption for 2013-2015---Billion Gallons

Calendar Year	RFS	Ethanol				Corn Consumption (bil. bu.)
		Consumption	Imports	Exports	Production	
2013	13.8	12.9	0.20	0.50	13.20	4.80
2014	13.8	13.1	0.20	0.50	13.40	4.87
2015	13.8	13.4	0.20	0.50	13.70	4.98

Note: Assumes zero stock change each year. All ethanol variables exclude denaturant volumes.

Table 6. U.S. Renewable (D6) RINS Stock--Billion Gallons

Calendar Year	Beginning	Mandate - Production	Exports	Ending
2013	2.6	0.6	0.5	1.5
2014	1.5	0.4	0.5	0.6
2015	0.6	0.1	0.5	0.0

Table 7. U.S. Biodiesel Production for 2013-2015--Billion Gallons except Feedstock

Calendar Year	Mandate	Undifferentiated Biodiesel Gap	Renewable Gap	Total	Feedstock Requirement (bil. lbs.)
2013	1.28	0.00	0.00	1.28	9.6
2014	1.28	0.42	0.00	1.70	12.8
2015	1.28	0.42	0.00	1.70	12.8

The results of the analysis of this proposal differ from the results of the previous analysis of full implementation of RFS2 through 2015 as follows:

- Annual domestic ethanol production is 300 million gallons larger as a result of smaller Brazilian sugarcane ethanol imports,
- Annual corn consumption for domestic ethanol production is 190 million bushels larger,
- D6 RINs stocks are sufficient to fill the difference between the ethanol blend wall and the mandate for renewable biofuels through 2015,
- Domestic biomass-based biodiesel requirements are reduced from 2.57 billion gallons to 1.7 billion gallons in 2014 and from 4.73 billion gallons to 1.7 billion gallons in 2015,
- Biomass-based feedstock requirements are reduced from 19.3 to 12.8 billion pounds in 2013 and from 35.5 to 12.8 billion pounds in 2014.

There are several critical assumptions in this analysis that could impact the conclusions. Three assumptions are particularly important. First, if the biodiesel tax credit is not extended to 2014 and 2015 Brazilian ethanol would likely be more competitive with biomass-based biodiesel in meeting the advanced biofuels mandate so that imports would be larger than assumed here. Larger imports would in turn reduce domestic ethanol production and consumption under the blend wall assumption and therefore reduce the amount of corn used to produce ethanol. There would likely be minimal impact on biomass-based biodiesel production and consumption since larger quantities would be required to replace domestic ethanol pushed out by imported ethanol. Second, this analysis assumes that only biomass-based biodiesel and Brazilian ethanol are available to meet the advanced biofuels requirements. In fact, small quantities of other biofuels are available and could reduce the production of biomass-based biodiesel from the levels assumed here. EPA, for example, projects that consumption of other advanced biofuels could reach 150 million gallons in 2013. Third, the assumption about the size of the domestic ethanol blend wall is important in determining the amount of RINs stocks needed to meet the RFS2. Based on the current slow pace of implementation of E15 and the non-competitive pricing of E85 the growth assumption used here may be too optimistic. A smaller blend wall would require a faster pace of RINs use or slightly larger production and consumption of biomass-based biodiesel in 2014 and 2015 to meet the renewable fuels mandate gap.

Implications

We believe our proposal to freeze RFS2 mandates in 2014 and 2015 at 2013 levels represents a pragmatic way forward. It is realistic in that it would not force large scale adoption of E15, E85, or biodiesel. This is particularly important since it is by no means clear whether the infrastructure investments necessary for widespread E15 or E85 adoption could actually be made in this time frame. There is also uncertainty whether sufficient biodiesel production capacity would be available. However, the proposal does provide incentive for modest growth in E15 and/or E85 penetration by keeping the

mandate for renewable fuels above the current E10 blend wall. Even with relatively slow growth in domestic ethanol production through 2015, the proposal would maintain a high rate of use of ethanol production capacity and would provide for modest growth in the large demand base for corn. An increasing percentage of the domestic biodiesel capacity would be utilized without straining that capacity. Similarly, requirements for biodiesel feedstock would grow, but the growth would not overwhelm those markets. Obligated parties in the motor fuel supply chain could more easily meet their blending obligations with a combination of physical blending and use of RINs stocks. Finally, implementation of the proposal would also likely reduce the price of D6 ethanol RINs and eliminate the differential impact of those high prices on obligated parties. The key for the success of the proposal is that regulators, legislators, and industry participants use the next two years to develop a mutually agreeable biofuels policy beyond 2015.

Issued by [Scott Irwin](#) and [Darrel Good](#)
Department of Agricultural and Consumer Economics
University of Illinois



April 5, 2013

VIA ELECTRONIC MAIL
rfs@mail.house.gov

The Honorable Fred Upton
Chairman
Energy and Commerce Committee
U.S. House of Representatives
2322A Rayburn House Office Building
Washington, DC 20515

The Honorable Henry A. Waxman
Ranking Member
Energy and Commerce Committee
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and Ranking Member Waxman:

On behalf of the DuPont Company, I am pleased to offer the following responses to stakeholder questions that accompanied the House Energy and Commerce Committee's white paper on Blend Wall and Fuel Compatibility Issues released on March 20, 2013. The white paper and stakeholder questions raise key issues and DuPont is well positioned to provide constructive feedback. I look forward to working with you and the entire Committee in providing additional responses to the RFS-related white papers planned for later this year.

DuPont is an industry leader in providing advantaged products for agricultural energy crops, feedstock processing, animal nutrition, and biofuels. Our three-part approach to biofuels includes: (1) improving existing ethanol production through differentiated agriculture seed products, crop protection chemicals, as well as enzymes and other processing aids; (2) developing and supplying new technologies to allow conversion of cellulose to ethanol; and (3) developing and supplying next generation biofuels with improved performance, such as biobutanol.

DuPont has been a global leader in greenhouse gas emission reduction for many years, having begun systematic reduction of emissions from our operations almost two decades ago. Between 1990 and 2004 DuPont reduced our global greenhouse gas emissions by more than 70%. By 2015 we will further reduce our greenhouse gas emissions at least 15% from a revised base year of 2004 that reflects portfolio changes. We believe biofuels have a critical role to play in the development of alternatives for the transportation fuels sector, in

ways that are renewable, cost-effective, and commercially viable in multiple geographies with minimal environmental footprints.

Questions for Stakeholder Comment

1. To what extent was the blend wall anticipated in the debates over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?

Response: While we do not believe that the blend wall was anticipated during the energy debate in 2005, hearings and amendments to the 2007 energy bill indicate that the 36 billion gallon threshold far exceeded what could be accomplished with E-10 in the few years that followed but with expanded production the threshold would be met in 2014 or 2015 thereby creating a potential “blend wall”. Therefore, Congress intended for private industry to foresee and plan for this issue before the reality of the “blend wall” occurred. Oil companies were also aware of the “blend wall” during this time period and most have failed to adapt in order to avoid it. The few who planned well and have taken some appropriate steps to ensure they are able to comply now have a competitive advantage.

2. What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?

Response: With ethanol prices lower than gasoline prices, consumers will benefit from higher blends if the reduced cost of fuel production is passed on to them by the upstream fuel blenders. It is reasonable to expect, that in a time of falling market demand, competitive forces will result in lower prices being passed along to the consumer.

For automakers, the risks and benefits of E-15 should be relatively transparent. A large number of cars on the road today are compatible with E-15 given the extensive fuel testing done by EPA and DOE and the proportion of E-15 compatible vehicles increases every year. Ford and General Motors have both announced that E-15 is acceptable for use in later model cars and light trucks. For General Motors, 2012 and 2013 model-year vehicles can use gasoline blends with up to 15% ethanol and Ford’s 2013 vehicles can accept E-15 fuel. Ford has also indicated that its vehicles as old as model year 2010 can accept E-15.

For retailers, some additional fueling infrastructure will be required to accommodate E-15 to avoid customer confusion. During the 1970s when leaded gasoline was replaced with unleaded varieties, a different fuel pump was designed thereby preventing consumers from filling their tanks with the incorrect gasoline. The EPA approval of E-15 also requires warning labels at pumps for cars in model year 2001 and later which would add a layer of consumer awareness, and allow small engine users to avoid unintentional misfueling.

3. What are the risks of the introduction and sale of E-15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?

Response: There is not extensive data on the effects of higher ethanol blends on pre-2001 cars, which represent a minority of the cars on the road today. There are potential fuel moisture and heat of combustion issues associated with higher level blends and small and

marine engines. However, given that there is no federal mandate for E-15, owners of small and marine engines can continue to purchase E-0 and E-10 blends as they see fit to avoid any risks. While EPA has approved E-15 for model year 2011 and later, there is no federal mandate for E-15 and EPA did not approve E-15 for small engines. E-15 will simply be a fuel choice, not a required uniform national blend.

Given that E-15 will be a fuel option, all risks that can be associated with E-15 are avoidable. The benefits of the RFS are realized both at the national level and with the consumer in the form of lower fuel prices. The RFS serves the national interest in a number of ways. Renewable fuel reduces our reliance on foreign sources of oil and lessens the exposure to high and volatile global oil prices, giving nations like Iran significant strategic leverage over the U.S. economy. Renewable fuel also improves the U.S. trade balance when transportation dollars remain in the U.S., rather than supporting global oil markets, and is an important source of both jobs and income in rural America. Lastly, the RFS provides for progressively lower carbon fuels that reduce greenhouse gas emissions to the environment. The benefits of the RFS far outweigh any avoidable E-15 risks.

4. What is the likely impact, if any, of the blend wall on retail gasoline prices?

Response: In general, ethanol blending should lower retail gasoline prices due to the lower wholesale price of ethanol as compared to gasoline. Energy economist and analyst Phillip Verleger has examined the potential market share for renewable fuel and prices. According to his calculations if E-85 were to attain a 5% market share, every gallon of E-85 sold would save the consumer \$0.57. In addition, if fuel blenders choose to comply with the RFS through E-85, it would be expected to further reduce gasoline prices because of the large number of RINs. Thus if fuel blenders perpetuate the blend wall by not installing the infrastructure for higher blends, the effect is higher fuel prices for consumers.

5. What is the timing of the implementation challenges related to the blend wall? Will some entities face difficulties earlier than others?

Response: The blend wall is a temporary event, indicative of a market transition, as there are no fundamental barriers to the oil industry complying with the RFS by blending more renewable fuels into the fuel pool. Both E-85 and E-15 are readily available with limited additional infrastructure. In addition, in the near future we will begin to see "drop-in" fuels, such as butanol, with higher allowable blending levels which will also ease compliance.

6. Could the blend wall be delayed or prevented with increased use of E-85 in flexible fuel vehicles? What are the impediments to increased E-85 use? Are there policies that can overcome these impediments?

Response: To date, there have been three impediments to E-85 use: (1) the balance between price and fuel economy; (2) fuel infrastructure and availability; and (3) the quantity of E-85 compatible vehicles on the road. While E-85 sells at retail for approximately 10% less than E-10, E-85 has a lower fuel economy and consumers will generally purchase E-10 fuel. Recently, however the market value of RINs has risen, which has enabled blenders to sell E-85 to a retailer at a lower price creating a larger price margin between the two fuels. As E-85 prices continue to decline, the demand for E-85 fuel is expected to increase.

The remaining two barriers, fueling infrastructure and the limited quantity of vehicles that can accept E-85, are not mutually exclusive, however. If the oil companies were to facilitate and encourage their retail partners to deploy E-85 and facilitate the required infrastructure, E-85 could deploy relatively quickly. In addition, policies that would reduce the cost of installing E-85 infrastructure at fueling stations could help encourage independent station owners to vend E-85. Currently, oil companies have restrictive marketing agreements with independent retailers to prevent them from installing E-85 or other fuel pumps. Policies are also needed to provide incentives for automakers to produce E-85 compatible vehicles. Proven automotive technologies exist to expand the fleet of vehicles capable of using E-85. Without a sufficient number of E-85 compatible vehicles on the road, market demand for the fuel is largely absent. Likewise, without E-85 fuel readily available at most fueling stations, FFV fleets are not an attractive option.

7. Is E-15 misfueling unavoidable? Are there lessons from the labeling and dispensing of diesel, E-85 and other fuels that prevent their misfueling that can also be applied to E-15? What specific actions are companies taking to address potential misfueling concerns under MMPs?

Response: Some misfueling may be inevitable and could be intentional if consumers are seeking to benefit from lower priced-options, but can be mitigated with adequate instructions and modified fuel pumps. With adequate instructions in the form of warning labels at fuel pumps, as required by EPA's E-15 waiver decision, the American consumer is capable of making informed choices and acting on them responsibly. Since some consumers will overlook warning labels, modified pumps may be necessary to impede incorrect fueling. In addition, oil companies are very successful in influencing and informing consumer behavior through advertising, and there is no reason to believe they cannot do the same in regard to the proper use of E-15.

8. Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?

Response: The RFS is not causing the blend wall. The lack of infrastructure for higher blends is. The oil companies have been aware of the volumetric requirements of the RFS since 2007. They have been aware of declining U.S. consumption of gasoline since 2008. They have full knowledge of the previous 10% limit of ethanol blending into gasoline, a regulatory provision that is *not* part of the RFS but is contained in other Clean Air Act fuel regulations.¹ They have known that to comply with the RFS additional infrastructure is needed, and for the majority, they have not taken appropriate steps to ensure they are able to comply. For the few that have planned well and taken steps to ensure that they are able to comply, they have a competitive advantage. We believe that there are several routes to compliance available, as described above, and that EPA has sufficient flexibility in the current program to accommodate that transition.

¹ For example, Section 211 of the Clean Air Act. 40 CFR Part 79.

9. Have the 2017 and Later Model Years Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy standards for cars and light trucks changed the implementation outlook of the RFS?

Response: The purpose of CAFÉ standards is to reduce energy consumption that will help address our country's dependence on imported oil, save consumers money at the pump, and reduce emissions of greenhouse gases that contribute to global climate change. Given that renewable transportation fuels contribute to reducing our dependence on foreign oil, save consumers money and reduce fossil fuel-based greenhouse gas emissions, there is no reason to change the implementation outlook of the RFS based on CAFÉ standards.

The CAFÉ standards are contributing to the decline in overall fuel consumption, along with significant changes in consumer behavior. High gasoline prices have caused consumers to purchase more efficient vehicles and drive less. This trend has been visible since the gasoline price shocks of the mid-2000s. Renewable fuels further contribute to reducing oil consumption as a transportation fuel.

Reducing greenhouse gas emissions is a key component of the CAFÉ standards. EPA is currently examining the difference in fossil fuel-based greenhouse gas emissions and emissions from biogenic sources. A framework and/or proposed rule is expected later this year. Given that biogenic sources of energy are renewable and recapture CO₂ from the atmosphere upon regrowth, these emissions should be treated differently from fossil fuel-based emissions. Incorporating higher blends of ethanol into the transportation fuel supply should not affect the greenhouse gas goals of the CAFÉ standards or change the implementation outlook of the RFS.

10. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?

Response: As described above, policies to encourage the availability of higher ethanol blends would ease the challenges posed by the blend wall. In addition, DuPont and other companies are developing and commercializing "drop in" renewable fuels that will play a significant role in the future. Our Butamax joint venture with BP has developed bio-butanol, a fuel with performance characteristics close to those of gasoline and which is compatible with the existing gasoline distribution and dispensing infrastructure. Butanol does not have the corrosiveness or water affinity of ethanol and can be moved through existing fuel pipelines. Butanol has been tested extensively in automobiles, with millions of vehicle miles logged, and has been tested in retail gasoline stations. We are currently producing bio-butanol in a demonstration facility and anticipate commercialization in the U.S. in 2014 or early 2015. The commercialization strategy is to convert existing grain ethanol plants to produce butanol instead of corn-based ethanol. Butanol has a higher allowable blend limit of 16% and EPA is proposing to raise butanol blending levels proportionally with increases in ethanol blending levels. We anticipate rapid development of butanol production capacity, as Butamax will license the technology to grain ethanol facilities. Facilities representing almost one billion gallons of ethanol capacity in the U.S. have already expressed interest in converting to butanol.

11. What are the impacts on renewable fuel producers if the RFS is changed to avoid the blend wall?

Response: In creating the RFS Congress set forth a long term policy signal that was intended to induce both rapid expansion in grain ethanol production and extensive and sustained private sector investment in developing, demonstrating and commercializing advanced renewable fuels. DuPont and other companies have responded with multi-year development programs that in our case have involved investing some \$500 million dollars and extensive internal technical capacity, significant capital facility investments to date for technology development and demonstration, and we are now making major capital investments for first commercial scale production facilities. There are a number of other companies similarly situated. We have done so under a policy framework that set a fifteen year plan and provided the kind of line of sight that is important for investment confidence. We are only five years into that fifteen year policy. To change the RFS now would create tremendous uncertainty and potentially undermine the anticipated return on these investments for our shareholders.

It would also serve to take the U.S. out of its current front runner position in fuels innovation, and possibly jeopardize its front runner position in biotechnology development. Under the RFS we are seeing investments flow into the U.S. from Swiss, Danish, Dutch and Spanish companies in the renewable fuels sector. Were the RFS changed we would likely see those investments shift elsewhere, such as to China or Brazil, which is also pursuing these technologies.

Thank you for the opportunity to comment on the Blend Wall and Fuel Compatibility Issues white paper. I look forward to providing additional responses for the white papers that are planned for later this year. Please contact me at Jan.Koninckx@dupont.com if you have any questions about the responses provided.

Sincerely,

A handwritten signature in black ink, reading "Jan Koninckx". The signature is fluid and cursive, with the first name "Jan" and last name "Koninckx" clearly distinguishable.

Jan Koninckx
DuPont Industrial Biosciences

Ben Montalbano
benm@eprinc.org
April 6, 2013

Comments on White Paper 1, *Blend Wall / Fuel Compatibility Issues*, by the House Energy and Commerce Committee

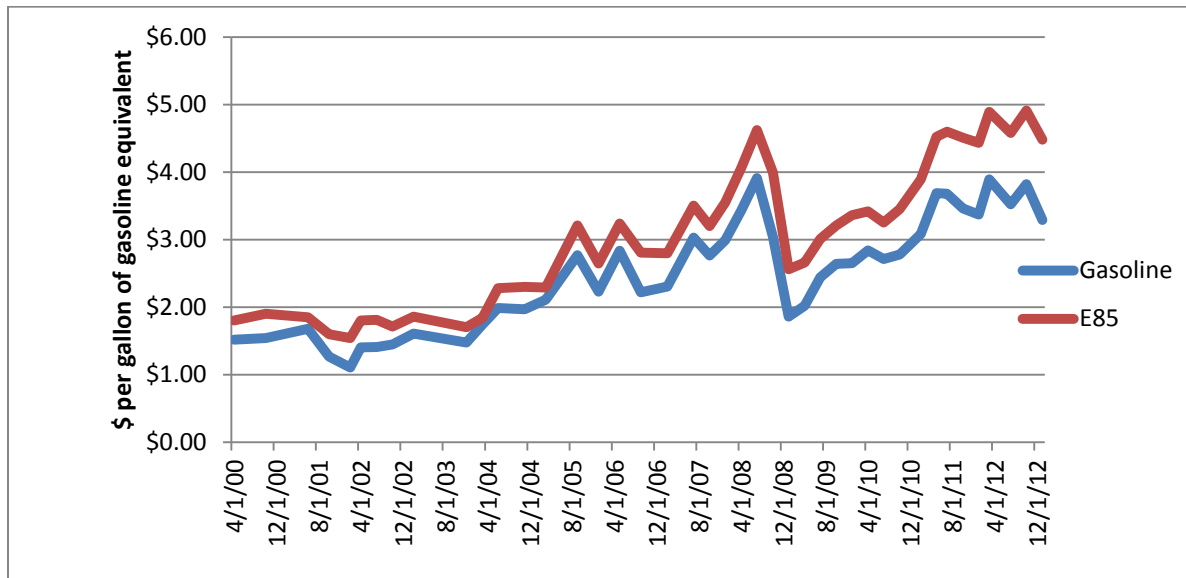
Introduction

The Energy Policy Research Foundation, Inc. (EPRINC) has undertaken research and analysis on ethanol's role in the domestic gasoline pool since 2006. A list of our major research reports and links to those studies are provided in the bibliography.

Ethanol when blended into gasoline can play an important and cost effective role in meeting both automobile and environmental fuel specifications. The use of ethanol in the gasoline pool, when adjusted for both market and technology limitations, presents no major economic or technical risks as a supplement to the production of gasoline. The fundamental policy challenge today is directly attributable to a regulatory regime that requires annual upward adjustments in volumetric targets in ethanol use, without regard to either its contribution to the cost of gasoline or technical limitations in the use of ethanol within the U.S. automobile fleet. It is not ethanol per se that presents a risk of a price spike in gasoline or a major risk to automobile engines, but the federal mandate requiring ever larger volumes of ethanol into the gasoline pool. The current regulatory regime, if not reformed in some substantial manner, will likely spike gasoline prices, perhaps by over \$1/gallon in the next 18 months.

As federal mandates take the U.S. gasoline pool above 10 percent ethanol by volume, increased use of ethanol can only enter the transportation fuels market through a separate gasoline product, E85 (60-85% ethanol). This fuel can only be used in so-called flex fuel vehicles. Consumers have been resistant to E85 because of its high cost when adjusted on a BTU basis to regular gasoline (E85's lower energy content corresponds directly to reduced fuel economy in flex-fuel vehicles), limited availability and higher frequency of refill. As shown in Table I below, at no time since 2000 has E85, when adjusted for BTU content, been less expensive than E-10 gasoline. This is a fundamental and potentially lasting condition in the domestic gasoline market and the principal reason it will be both difficult and costly to encourage consumers to purchase larger volumes of E85.

Price Comparison, Energy Content Adjusted, E-10 vs E85, 2000 – 1st Quarter of 2013



Source: U.S. DOE, Alternate Fuels Data Center. National retail average, quarterly data.

EPA has recently approved another gasoline product, E15 (gasoline blended with 15% ethanol), for a large portion of the U.S. automobile fleet. But neither the driving public nor the U.S. auto industry is prepared to use E15 in large volumes. E15 also faces the same cost constraints as E85, although to a lesser extent. For the most part higher volumes of ethanol blending will require higher sales of E85.

All refiners and other obligated parties (such as importers) must document that they have blended ethanol into gasoline by acquiring RINs (renewable identification numbers). Ethanol producers generate RINs when product is produced. RINs are then acquired from ethanol producers by obligated parties when blended into gasoline. In recent years, the ethanol fuel mandate (also known as the Renewable Fuel Standard or RFS) permitted ethanol blending below 10% of the gasoline pool. Refiners and other obligated parties could, however, blend above their mandated requirement and then retain those extra RINs for sale to obligated parties who had not met their volumetric mandates. Historically, RINs have sold for a few pennies a gallon, but in recent weeks RIN prices have risen to \$1 gallon or more. The cause of rising RIN prices is complicated, but is largely driven by expectations among obligated parties that they will soon face very high costs of blending ethanol at levels above 10% of the gasoline pool and will require RINs from an ever diminishing supply to meet the requirement.

As the U.S. gasoline pool has approached 10% ethanol concentration over the past year, the supply of RINs has declined as U.S. refiners cannot physically blend above RFS mandated volumes to generate surplus RINs as they could in the past when volumetric mandates were far below the 10% threshold. Other refiners who are already at (or will soon hit a 10% blending volume) are now entering the market to buy RINs to meet the newer and higher RFS volumetric blending requirements. RIN values are rising now because markets are forward looking and expectations remain that EPA will take the entire transportation fuels market head-on into the blend wall.

Instead of purchasing high cost RINs, obligated parties could attempt to distribute increased ethanol volumes through E85 or E15, but this option is highly limited and expensive. The remaining options are: (1) cut throughput (gasoline production) so a refiner's or importer's renewable fuel obligation (RVO) can be lowered and bring requirements under 10%, (2) expand exports so incremental capacity utilization is not captured by the mandated volume obligations, or (3) pay a large fine for not meeting the mandated blending volume. Each of these options means that RINs are likely to continue to increase in value and it also means a spike in gasoline prices is inevitable.

EPRINC notes that a study recently completed by Informa Economics concludes that ethanol, instead of increasing the price of gasoline, has led to a reduction in the price of gasoline by 2-4 cents a gallon, and that in any case, gasoline prices are determined largely by crude oil costs and gasoline taxes.¹ We agree that any kind of long-term assessment of gasoline markets will conclude that crude oil and taxes account for 80-90% of the cost of gasoline. The remainder is determined by refinery margins, distribution costs and retail margins. While in general feedstock costs and taxes determine gasoline prices, the Informa Economics study fails to explain ethanol's prospective role (and more importantly, the role of the RFS fuel mandate) in driving up refinery margins. The principal confusion in such analyses is that as mandated ethanol use exceeds 10% of the gasoline supply, a large differential opens up between the cost of purchasing ethanol and the much higher cost of "using" (or blending) ethanol into the gasoline pool.

Responses to Questions

Question 1) To what extent was the blend wall anticipated in the debates over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?

Although there was substantial agreement in the years preceding the passing of EPACT and EISA that U.S. gasoline consumption would continue to grow to 150 billion gallons, thus accommodating the conventional renewable fuel volumes proposed in EISA at ethanol blend rates below 10%, this forecast was neither universally accepted among independent energy analysts nor was acceptance of this forecast necessarily evidence that fuel mandates were a wise decision. The drawback of both EPACT and EISA is not that the legislation was based on a poor forecast. Any forecast is likely to be incorrect because advances in technology, changes in demand, automobile technology, and feedstock prices are all inherently uncertain. The fundamental flaw in the legislative program was that the fuel mandate provided for no flexibility for changes in either the technology or economics of producing gasoline should new conditions prevail in the marketplace. The legislation did provide for a waiver for economic harm, but this appears to be an extremely high threshold for EPA. Note that for every penny increase in retail gasoline prices, consumers pay an additional \$1.4 billion. An increase in gasoline prices acts as a substantial excise tax.

¹ **Retail Gasoline Price Impact of Compliance with the Renewable Fuel Standard**, Informa Economics, <http://ethanolrfa.org/page/-/PDFs/RIN%20Price%20Impact%20Whitepaper%203-25-13.pdf?nocdn=1>

A 2006 EPRINC report pointed out that, “At the very least, additional measures to promote ethanol should not aggravate supply risks by reducing flexibility in how the overall mandates are met.”² In addition, EPRINC research released in November 2007, before EISA was signed into law, had determined that ethanol could easily be absorbed into the gasoline pool at levels of approximately of 5%, but that volumes above 10% would be problematic. The study pointed out that,

There is an easy amount of ethanol that can be absorbed in the gasoline pool. That is about 5%, and that is where the market is now: about 8 billion gal/year, or 500,000 b/d. At that level, ethanol is a necessary and complementary component of the gasoline pool. It is the current situation. It represents the replacement of MTBE in an economic environment that accommodates ethanol prices higher than gasoline prices.

...For years beyond 2012, there are proposals for ethanol sales mandates that assume concentrations in gasoline above the current 10% cap. How that might be achieved is an unanswered question, given that only US automakers espouse the plan, and they account for only about half of US vehicle sales. Proposals for sharply increased ethanol sales simply assume that auto manufacturers will warranty existing cars for fuel blends containing far more than the current 10% maximum...

The policy aims driving ethanol expansion are sound: controlled growth and perhaps a reduction in petroleum imports; protection of the economy against oil price shocks; domestic fuel supply capacity more in line with consumption than it is now and less vulnerable to mishap.

Depending on an agricultural commodity to accomplish these goals, however, just adds the risk of the crop cycle to present instabilities. That dependency will be a concern until ethanol from cellulose becomes economic and available in large amounts. More immediately, the ethanol industry faces the stresses of consistently high corn prices, weakening product prices, the consequent compression of margins, and the possibility of producer consolidation. How the immediate stresses affect the ultimate shape of an industry still in its formative stages remains uncertain. What is certain is that the modern energy economy has constraints on how much ethanol it can absorb.³

² Goldstein, Larry and Ron Gold, *Update on Ethanol*, July 2006, , <http://eprinc.org/download/UpdateOnEthanol.pdf>

³ Kumins, Larry, *Energy Systems Limit Future Ethanol Growth*, EPRINC Report, November 2007

Question 4) What is the likely impact, if any, of the blend wall on retail gasoline prices, and

Question 6) Could the blend wall be delayed or prevented with increased use of E85 in flexible fuel vehicles? What are the impediments to increased E85 use? Are there policies that can overcome these impediments?

Crossing the blend wall is certain to increase gasoline prices. The U.S. refined products market has entered a phase in which the RFS discourages the supply of gasoline and diesel into the U.S. market and incentivizes its export. Low cost RFS compliance options such as blending ethanol at less than 10% concentration, the banking of carryover RINs and the purchase of sub- $\$0.05$ per gallon RINs are nearly exhausted. Obligated parties must now move up the compliance cost curve. While the refining industry, and perhaps the ethanol industry, is likely to absorb some cost increases, much of these costs will be passed on to consumers in the form of higher pump prices.

Obligated parties have several options before them to temporarily delay the blend wall. These options are problematic as they are both high cost and temporary and do not provide a workable long-term solution to the blend wall. Options to meet obligations in 2013 and 2014 include purchasing expensive and diminishing RINs, reducing the production of certain refined products, exporting greater volumes of gasoline and diesel (only fuel supplied to the U.S. market falls under the RFS, therefore exports do not count towards renewable volumetric obligations), importing less gasoline (imports do require RFS compliance) and blending more biodiesel (currently 10% more expensive than petroleum based diesel).⁴ These options reduce the supply of gasoline and diesel to the market while raising the cost of the product that is supplied into the domestic market. While the refining industry, and perhaps the ethanol industry, is likely to absorb some cost increases, much of these cost increases will be passed on to consumers in the form of higher pump prices.

E15 and E85 are of course options, but the discussion of fuel costs in the introduction explains why mid-level blends are not feasible economic solutions (not to mention the cornucopia of infrastructure issues afflicting mid-level ethanol blends). E85 exceeded the cost of E10 gasoline by $\$1.19$ per gallon or more during the 1st quarter of 2013 when adjusted for energy content, according to the Department of Energy. For E85 to be competitive in early 2013, its price would have had to be reduced by $\$1.19$ per gallon (not including discounts to incentivize additional refueling trips to the gas station) or the price of gasoline would have to rise by $\$1.19$ per gallon.

Theoretically, obligated parties could blend and sell E85 at a loss in order to generate RINs. Assuming a gallon of E85 contains 0.85 RINs, incurring a loss of $\$1.19$ on the sale of E85 would generate a RIN with a value of $\$1.40$. This implies a marginal cost of $\$0.14$ per gallon to supply E10 to the market as RINs dry up in 2014. Since prices are set by the marginal (or higher cost) producer, it can be expected that gasoline prices will rise by at least $\$0.14$ per gallon (since 1/10th of a RIN will be needed to cover mandated volumes above the 10% level). This would increase U.S. gasoline expenditures by nearly $\$20$ billion over the course of one year. This is the low-cost scenario.

⁴ See Department of Energy's January 2013 "Alternative Fuel Price Report," http://www.afdc.energy.gov/uploads/publication/alternative_fuel_price_report_jan_2013.pdf

Such a scenario is highly optimistic, but provides some insight into what the low-end of the RFS price shock might be. Obligated parties would have to take on billions of dollars of losses with the hope that they can later be passed through. Many refiners do not own terminals or retail stations, so they cannot simply set the price at the retail level or order loss-making ethanol blending. Geographic and infrastructure constraints would limit the amount of E85 that could be sold and where it might be sold, giving some obligated parties a compliance advantage over others.

The high-cost end of the range (of exceeding the 10% blend wall) would require gasoline prices to rise to make E85 competitive. An increase of \$1.19 for a gallon of E10 gasoline at the pump would boost E85 sales and generate RINs, but would cost U.S. consumers about \$160 billion over one year.⁵ This situation assumes that infrastructure constraints are sufficiently resolved and flex-fuel vehicle demand is adequate enough that E85 freely enters the market, thus generating RINs. Any hiccups in this scenario will only increase gasoline prices and volatility.

The blend wall affects each obligated party differently. Some have more carryover RINs than others. Midwest refiners have better access to ethanol supplies and E85 outlets, while coastal refiners have direct access to export markets. Obligated parties will take different steps to reduce their RVO (by exporting) or generate RINs (with E85) depending on their individual operations. But regardless of individual circumstances, the RFS sends all obligated parties the same message: the U.S. is going to be a very difficult and expensive place to sell gasoline. Additional regulatory initiatives such as recently announced Tier 3 standards to reduce the sulfur content of gasoline only amplify the disincentive to sell gasoline into the U.S. market: domestically sold gasoline must contain 10 ppm of sulfur, while exports to anywhere but Europe may contain higher levels.

Question 8) Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?

The EPA waiver process has at least two important limitations. The first is that EPA may only issue a waiver for one year at a time. This is an inadequate time horizon for participants in the gasoline market to adjust blending levels as obligated parties face a resumption of higher mandates after the waiver expires. As long as blending and the cost of achieving those levels remain highly uncertain (and costly) short-term waivers do not address what is essentially a long-term system constraint in absorbing higher volumes into the gasoline pool.

A second major flaw is that a waiver may be issued only if EPA determines that the RFS is causing “significant” economic damage. It is not clear how EPA defines significant. EPA set itself a high bar for “significant” when it denied drought-related waiver requests in 2012. As there is no nominal dollar value associated with EPA waiver criteria and EPA remains vague on how high gasoline prices will have to rise before a waiver might be issued, this opens up the domestic gasoline market to substantial price and dislocation risks.

⁵ EPRINC first raised the issue of using E85 to alleviate a blend wall crisis in a 2009 report, ‘Will the Ethanol Mandate Drive Up the Cost of Transportation Fuels’, <http://eprinc.org/pdf/costofethanolmandate.pdf>

Regarding changes to programs that promote the use of renewable fuels into the gasoline pool, any legislative remedy should provide adequate market flexibility for refiners and importers to adjust to large movements in feedstock prices, production costs, and automobile technology. Removing volumetric fuel mandates, which cannot by definition, adjust to uncertainty in market conditions is clearly an important starting point in any reform program. RINs or any tradable credit cannot overcome an inherently costly transportation fuel. Ethanol is a very important component of the gasoline supply at concentrations levels of approximately 5% of the gasoline pool. It replaced MTBE as the primary oxygenate for U.S. gasoline and serves as an octane booster. However, as blends approach 10% concentration, the relative cost of ethanol increases as its value declines. Mid-level blends such as E15 and E85 are simply uneconomic under current market conditions. Sustainable legislative solutions will be those that promulgate strategies for renewable fuels that hold up well under a wide range of future market conditions.

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**Comments on Blend Wall/Fuel Compatibility Issues
For the House Committee on Energy and Commerce
By the Environmental and Energy Study Institute
April 5, 2013**

The Environmental and Energy Study Institute (EESI) is a not-for-profit organization, based in Washington, D.C., dedicated to promoting an environmentally and economically sustainable society. EESI seeks to advance energy efficiency and renewable energy (including sustainable biomass energy). Energy efficiency and renewable energy are a win-win for advancing public and environmental health, energy security, and a prosperous, sustainable economy, and they are essential for mitigating and adapting to a rapidly changing climate.

EESI applauds the Committee's bipartisan initiative to review the Renewable Fuel Standard. EESI was founded by a bipartisan Congressional caucus almost 30 years ago, and since then, EESI has remained dedicated to providing Congress with the information, analysis, and expertise that it needs to address the nation's complex and difficult environmental and energy challenges.

Questions for Stakeholder Comment

1. To what extent was the blend wall anticipated in the debate over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?

Congress did not anticipate that U.S. demand for liquid transportation fuels would decline after 2007. Few predicted the depth of the economic crisis that was to come. Forecasts by the Energy Information Agency (EIA) at the time indicated a continuing modest increase in U.S. demand. In addition, Congress anticipated there would be a more rapid build-out of ethanol infrastructure and stronger demand for higher ethanol blends such as E85 from the growing fleet of flex fuel vehicles (FFV's).

None of these forecasts and assumptions came to pass. Instead, overall U.S. demand for liquid fuels has declined significantly (a trend that is expected to continue), the number of gas stations selling E85 remains relatively small, and the proportion of FFV's that actually use E85 is even smaller. Each of these factors has contributed to the accelerated emergence of the "blend wall." These factors were driven and intensified in large part by the historic economic crisis that occurred after 2007 and the 2012 drought (which caused corn and ethanol prices to soar).

2. What are the benefits and risks of expanded use of E-15 to automakers, other gasoline powered equipment makers, refiners, fuel retailers, and others involved in the manufacture and sale of gasoline and gasoline-using equipment?

The public health, environmental, and economic benefits of expanded E15 use would be significant. Ethanol is a much cleaner fuel than gasoline, producing far fewer ozone-producing, toxic, and carcinogenic air pollutants. Using more ethanol instead of gasoline will help continue progress cleaning the air and improving public health for millions. It should be noted that ethanol is a very effective octane enhancer, but carries none of the toxic risks of the potent aromatics which are currently used in gasoline to provide octane.

Expanding the market for ethanol in general will allow new, more environmentally sustainable, advanced cellulosic ethanol to enter the market and compete with corn ethanol. It will encourage biomass producers to establish and develop more sustainable biomass crops and utilize more existing biomass residue and waste streams. It will help make it easier to finance commercial scale advanced biofuel plants. In so doing, more domestic investment, technology innovation, and job creation will be stimulated. Moving the blend wall with E15 helps the RFS continue toward its most important goal – more sustainable, domestically produced, renewable advanced biofuels.

The EPA and the DOE have carefully and systematically examined the effects of E15 on vehicle performance for 2001 and newer vehicles. The EPA has certified that it is safe to use in those vehicles. The EPA has not certified E15 for other gas-powered equipment or vehicles made before 2001. The product needs to be clearly labeled on pumps so that consumers will choose the right fuels for their vehicles and equipment. Inevitably, some misfueling will occur. It is uncertain whether this will have any impact on older vehicles. Testing has not been completed. Occasional or single incidents of misfueling are not likely to cause much damage to most vehicles or equipment. Persistent misfueling is likely to be rare. Labeling the products clearly and informing consumers are the most effective ways to limit risks of misfueling.

Congress should act to hold auto manufacturers, gasoline-powered equipment manufacturers, and fuel distributors free of liability for the use and mis-use of properly labeled E15 fuel in properly labeled equipment. Moving forward, auto manufacturers and fuel distributors should be encouraged (if not required) to make all vehicles and fueling equipment compatible with using higher blends of ethanol, up to E85. This will provide much greater market flexibility for all.

3. What are the risks of the introduction and sale of E-15 to the owners of pre-2001 motor vehicles, boats, motorcycles, and other gasoline-powered equipment not approved to use it? Are there risks to owners of post-2001 vehicles? How do these risks compare to the benefits of the RFS?

See previous response.

4. What is the likely impact, if any, of the blend wall on retail gasoline prices?

Retail gasoline prices are driven by far more significant factors than the ethanol blend wall. Ethanol still only accounts for a relatively small percent of the nation's gasoline supply. The most dominant factors affecting retail gasoline prices include changes in global supply and demand for oil; changes in regional fuel supplies, distribution and refining capacities; global political turbulence and conflicts; and extreme weather events. The recent rapid rise in the price of renewable identification numbers (RINs) has been found to have little, if any effect on gasoline prices.

Ethanol, however, has been shown by several studies¹ to play a role in **moderating** – not increasing – the price effects of changes in the global, national, and regional petroleum and gasoline markets. American consumers are paying significantly less to fill up their tanks than would be the case without the E10 ethanol blend.

¹ <http://www.card.iastate.edu/publications/dbs/pdffiles/12wp528.pdf>

5. What is the timing of the implementation challenges related to the blend wall? Will some entities face difficulties earlier than others?

The biggest impact of the blend wall is on new cellulosic ethanol producers and their biomass supply chains. The blend wall means they will have no place to sell their product. The advanced biofuel industry is just starting to scale up to commercial production. If there is no market for their product, no one is going to invest in building new production capacity. This will delay or stop the deployment of these complex new advanced biofuel production systems now.

There are no quick solutions. Accelerating the approval and use of E15 blends would help the most – making room for an additional six to seven billion gallons of ethanol in the fuel market. However, state regulators are moving slowly on approving the use of E15. Fuel distributors are in no rush to market and sell E15. Potential liability issues are a concern to many, but the oil industry is not encouraging their retail distributors to offer the product either. And the petroleum industry, auto makers and many others are actively campaigning, warning the public not to use it. The uncertainty surrounding E15 has thus become a significant barrier to both investment by fuel distributors and consumer demand.

Increasing demand for E85 would help, too. There are about nine million FFV's on the road today, but relatively few private FFV owners use E85. There are still too few fuel retailers who have installed E85 pumps across the country. Studies have found that at least 10-20 percent of local fuel retailers need to have E85 pumps in a given area for E85 sales to take off. Yet, less than one percent of gas stations across the country offer E85 today. High corn and ethanol prices (due to the 2012 drought) do not help either; on an energy-equivalent basis, E85 is more expensive than gasoline in most markets. FFV drivers **do** compare ethanol and gasoline prices based upon energy equivalence, not volume. The price of E85 has to be well below the energy-equivalent price of gasoline if they are going to purchase it. Finally, the production of FFV's is no longer encouraged in federal policy, so future production of FFV's is expected to decline. This is no way to encourage fuel distributors to put in more E85 pumps.

6. Could the blend wall be delayed or prevented with increased use of E-85 in flexible fuel vehicles? What are the impediments to increased E-85 use? Are there policies that can overcome these impediments?

See previous response.

Placing a steadily increasing price on the carbon content of fossil fuels would likely be the most economically efficient and effective way to encourage fuel marketers and consumers to switch to cleaner, lower carbon, renewable transportation fuels. This would also likely increase consumer demand for more efficient, flex fuel, and ethanol -optimized vehicles.

In lieu of an escalating price on carbon, it would be helpful for Congress to mandate that all vehicles sold in the United States (including, for example, plug in hybrids) be FFV's by a date certain. Congress could provide incentives for using, marketing, and distributing E85, or higher blends, more generally. EPA fuel efficiency standards and fuel standards could also more pro-actively encourage the production of more FFV's and renewable ethanol consumption, as well as the development and deployment of ethanol optimized engines in future vehicles.

7. Is E-15 misfueling unavoidable? Are there lessons from the labeling and dispensing of diesel, E-85 and other fuels that prevent their misfueling that can also be applied to E-15? What specific actions are companies taking to address potential misfueling concerns under MMPs?

See previous response. Consumer education and proper labeling are key.

8. Can blend wall implementation challenges be avoided without changes to the RFS? Is the existing EPA waiver process sufficient to address any concerns? If the RFS must be changed to avoid the blend wall, what should these changes entail? Should any changes include liability relief or additional consumer protections for addressing misfueling concerns?

Leaving the RFS alone with the approaching blend wall may eventually reduce the price of ethanol to the point at which it is low enough to encourage more distributors to install new pumps and begin selling E15 and E85 at competitive prices – on an energy equivalent basis.

Under the RFS as it is, many companies are already adapting to the anticipated blend wall. A dozen or more corn ethanol plants soon may be converted to producing biobutanol, which has a higher energy density than ethanol and can be used as a drop-in fuel, shipped in pipelines with gasoline, etc. Butanol could be blended into gasoline along with ethanol. In addition, other advanced biofuel producers are making other types of drop-in fuels which will not be encumbered by the blend wall. They are banking on the RFS staying in place as it is.

Without changing the RFS, Congress could help further by releasing fuel distributors and auto manufacturers from exposure to E15 misfueling liability, by mandating that 100 percent of vehicles sold in the U.S. will be FFV by a date certain, and by providing strong incentives to consumers and fuel distributors to increase consumption and sales of higher ethanol blends. A better corn crop in 2014 would go a long way toward helping make ethanol prices more competitive with gasoline on an energy equivalent basis.

While there are many ways that EESI would recommend to strengthen the RFS to advance critical national energy, environmental, and economic priorities, in the current political moment, there seems to be a significant downside political risk of opening up the RFS for revision. The risk is that, at the end of the day, the nation may be left even more dependent on oil than it is now, with dirtier air, compromised public health, increased environmental degradation, reduced energy security, and renewed economic recession across rural America. This is not the time to change the RFS.

9. Have the 2017 and Later Model Years Light Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy standards for cars and light trucks changed the implementation outlook of the RFS?

The new EPA fuel economy standards removed an important incentive for the production of FFV's and thus a key condition for success of the RFS. The EPA did this, however, in recognition of the fact that so few FFV owners were actually using higher blends of renewable fuels, which was the intent of the original incentive to manufacturers. Lack of demand for E85 can be attributed to the lack of E85 pumps and the high price of E85. Production of FFV's, deployment of E85 blender pumps, and availability competitively priced E85 all need to occur at the same time. Congress and the EPA need to take a systems approach to implementing the RFS if it is to be successful.

10. What other methods, including the use of drop-in fuels, are available to industry to ease the challenge posed by the blend wall?

See previous response.

11. What are the impacts on renewable fuel producers if the RFS is changed to avoid the blend wall?

Now is not the time to roll back the RFS. Rolling back the RFS would have the greatest impact on producers of more sustainable, next generation advanced biofuels.

Some concluding thoughts.

The RFS was enacted to address urgent and compelling national concerns. While the recent boom in domestic oil production may promise significant economic benefits in the short-term, in the long term, continuing U.S. oil dependence poses a significant threat to U.S. economic, energy, health, climate, and environmental security.

Based upon mounting evidence, climate scientists² are increasingly recognizing that the extreme weather events observed with increasing frequency in the United States and around the world in recent years are connected to U.S. and global dependence on oil (and other fossil fuels). Military leaders have identified both oil dependence³ and climate change⁴ as significant threats to U.S. and international security. The U.S. Department of Defense (DoD)⁵ has found that its continued dependence on oil poses a significant strategic vulnerability to its ability to carry out its mission. As a result, the DoD is moving aggressively toward using next generation biofuels for aviation and marine fuels. In short, the United States must move quickly to dramatically reduce this dangerous dependence.

Renewable biofuels can help. According to researchers at the Energy Biosciences Institute of the University of California, Berkeley,⁶ the United States has the potential to meet 30 percent or more of its entire liquid transportation fuel needs with domestically produced biofuels—several times more than the United States produces today.

The RFS is helping the United States get started. Since it was first enacted in 2005 and strengthened in 2007, the RFS has:

- helped reduce U.S. dependence on oil imports by displacing about ten percent of the gasoline supply (by volume)⁷ and about two percent of diesel fuel with renewable biofuels;
- helped reduce the impact of global oil price spikes for American consumers and reduce the cost of transportation fuels⁸ below what it would have been otherwise;
- created more than 100,000 direct, new jobs⁹ in the biofuels industry (plus hundreds of thousands of additional new jobs, indirectly);

² <http://www.pnas.org/content/early/2012/07/30/1205276109.full.pdf+html>

³ <http://www.cna.org/sites/default/files/MAB4.pdf>

⁴ <http://www.cna.org/sites/default/files/National%20Security%20and%20the%20Threat%20of%20Climate%20Change%20-%20Print.pdf>

⁵ http://energy.defense.gov/Operational_Energy_Strategy_Implementation_Plan.pdf

⁶ <http://the-scientist.com/2012/07/01/growing-better-biofuel-crops/>

⁷ http://www.eia.gov/forecasts/steo/report/us_oil.cfm

⁸ <http://www.card.iastate.edu/publications/dbs/pdf/12wp528.pdf>

- started to shift the U.S. transportation system away from its dependence on climate-polluting fossil fuels toward more sustainable, renewable biofuels; and
- created a new advanced biofuels industry and biorefineries, which will use more sustainable and more climate-friendly biomass, and which, from the depths of the economic recession, are just beginning to ramp up to commercial scale across the country.

However, the United States still has a long way to go to end its dependence on petroleum. Oil dependence continues to wreak havoc with the U.S. economy and household budgets, to expose the U.S. and global economy to threats of supply disruptions due to armed conflicts and civil unrest, and to accelerate harmful climate change, threatening the well being of current and future generations. Producing more oil domestically will not change the fact that the U.S. petroleum market is tied to the global petroleum market where supply, demand, and prices are determined largely by others beyond U.S. shores acting according to their own interests.

The United States can do much more to reduce its oil dependence. Increased fuel economy standards (as the Obama Administration just did¹⁰), accelerated development and use of affordable electric drive (with renewable power) and other zero emission vehicles, and expansion of public and alternative transportation options can all make a significant difference over the next decade.

The RFS can continue to help, too. With continued implementation, the RFS will help replace as much as 25 percent of the nation's gasoline supply with renewable biofuels by 2022 – if Congress and the general public maintain their strong commitment.

The United States certainly can and must “do corn better and do better than corn” with respect to sustainable biofuel production. The corn and corn ethanol industry have made significant advances already in reducing resource consumption and environmental impacts. However, they can and should do much more. Federal farm policies (conservation and energy titles) should be strengthened to encourage farmers to produce corn more sustainably, on existing crop land and to accelerate the development of much more sustainable, climate-friendly biomass resources and biofuels. Sustainably produced biofuels can be a win-win for advancing public and environmental health, energy security, and a prosperous, sustainable economy, and they are essential for mitigating and adapting to a rapidly changing climate.

For additional information, please contact Ned Stowe, EESI, nstowe@eesi.org, 202-662-1885

⁹ http://ethanolrfa.3cdn.net/c0db7443e48926e95f_j7m6i6zi2.pdf

¹⁰ <http://www.whitehouse.gov/the-press-office/2012/08/28/obama-administration-finalizes-historic-545-mpg-fuel-efficiency-standard>

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April 5, 2013

**Renewable Fuel Standard Assessment Whitepaper:
Blendwall /Fuel Compatibility Issues.**

House Energy & Commerce Committee
Majority staff Ben Lieberman
Minority staff Alexandra Teitz
RFS@mail.house.gov

Renewable Fuel Standard Assessment Whitepaper: Blendwall /Fuel Compatibility Issues.

Dear Sir or Madam:

ExxonMobil submits this statement in response to the House Energy & Commerce Committee's white paper "Renewable Fuel Standard Whitepaper: Blendwall /Fuel Compatibility Issues".

ExxonMobil is an "obligated party" under the Renewable Fuel Standard (RFS) and its operations are affected by the RFS program implementation.

ExxonMobil believes that the RFS is an unworkable mandate and needs to be repealed. The program requires annually increasing volumes of biofuels to be blended in gasoline and diesel consumed in the U.S. The 2007 projections of increasing gasoline demand did not materialize. Instead, demand for gasoline declined and is projected to continue to decrease. Annual volumetric increases of biofuels are problematic because the blended ethanol requirements necessary to meet the mandate must then exceed the 10% design limit for the overwhelming majority of vehicles and fuel retail infrastructure in the U.S. (E10 blendwall.) Given that every gallon of gasoline consumed in the U.S. must carry a biofuel obligation, the RFS, if unchanged, would force refiners and importers to provide into the marketplace gasoline/ethanol blends that would be outside the range of fuels used in the design and certification of most vehicles. OEMs do not warrant their automobiles for problems associated with use of fuels above E10, including 2001 and newer vehicles covered by EPA's E15 partial waiver. E85 fuel is not a viable solution to the blendwall - according to EIA's 2013 Annual Energy Outlook Early Release, E85 fuel use will continue to be less than 0.5% of the U.S. transportation energy demand.

ExxonMobil supports comments submitted to the House and Energy Committee on this whitepaper by the American Petroleum Institute (API) and the American Fuel and Petrochemical Manufacturers (AFPM).

Thank you for your consideration of these comments.

A handwritten signature in black ink that reads "Chris W. Erickson". The signature is written in a cursive, flowing style.